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PROGRESSIVE MEDICINE.

A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES,
AND IMPROVEMENTS

IN THE

MEDICAL AND SURGICAL SCIENCES.

EDITED BY

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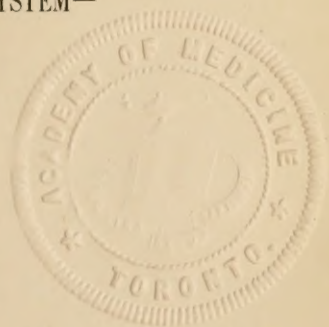
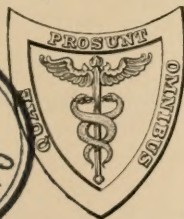
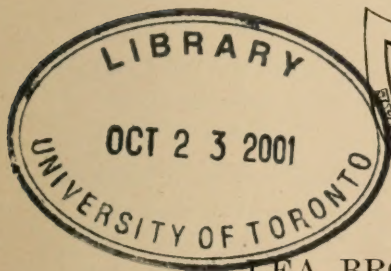
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VOLUME III. SEPTEMBER, 1902.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART,
LUNGS, AND BLOODVESSELS—DERMATOLOGY AND SYPHILIS—
DISEASES OF THE NERVOUS SYSTEM—
OBSTETRICS.



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PROGRESSIVE MEDICINE.

SEPTEMBER, 1902.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS.

BY WILLIAM EWART, M.D., F.R.C.P.

CROUPOUS PNEUMONIA.

Its Clinical Pathology. LATENT PNEUMONIA. Harvey Littlejohn¹ has collected thirty-three cases of latent pneumonia, and presents us with an instructive account of the features of this unusual condition. Its pathological aspect is of great interest, but it also has a most important medico-legal side, as sudden collapse and death, commonly during the stage of gray hepatization, is the usual termination, and might easily be ascribed to other causes when the circumstances happen to be in the least suspicious. Among the conclusions arrived at by Littlejohn, these are the most important :

1. Latent pneumonia is practically confined to habitual drunkards. The greater part of the attack may be run through by them while leading an apparently active life, even when an entire lung or parts of both lungs are consolidated.
2. Alcoholic apical pneumonia, however, seldom remains latent throughout.
3. Death occurs either suddenly during exertion, or in the street, or sometimes unexpectedly in bed during the night.
4. It is most common in the male and after the age of forty years, and during the winter months.
5. The explanation of the latency is to be found in the combination of a stimulating and of the dulling effect of alcohol.

In countries where pneumonia attains a high degree of frequency this form of the disease is probably well known, and is likely to attract further notice.

¹ Edinburgh Medical Journal, April, 1902.

APEX PNEUMONIA is of interest to the physician in connection with the current view that delirium is commonly associated with it, and also with the fact that it is apt to be the starting point, or perhaps more correctly an early complication, of pulmonary tuberculosis. The association of tuberculosis with pneumonia was discussed in *PROGRESSIVE MEDICINE* last year (Vol. III., pp. 19, 20), and the same subject is dealt with by Bergtold.¹ All atypical cases of pneumonia should be regarded with suspicion, as it is probable that some patients diagnosed as suffering from pneumonia are in an early stage of a phthisis which is not recognized until later. Attention should be given to the bacteriological examination of the sputum for the bacillus as well as for the pneumococcus. This is also one of the points considered in Eugene F. Cordell's² exhaustive study of "Apex Pneumonia and its Significance." According to his statistical data, "phthisis is rare in connection with acute lobar pneumonia, and the apex form involves no tendency to eventuate in it." Cases of apex pneumonia, even in the adult, sometimes assume a mild form. On the other hand, the general mortality is about the same as that of basal pneumonia; in children, however, it is almost *nil*. "Delirium is not infrequent in pneumonia, but intemperance, which is the chief cause of this symptom, does not seem to increase its relative frequency in apex pneumonia. There is no positive evidence that delirium is more frequent or prominent in the young with apical pneumonia. Pericarditis is relatively more frequent in apex cases. Acute lobar pneumonia affecting the apex is about one-third as frequent as that affecting the base, and of the two apices the right is affected about three times as often as the left. Involvement of one apex and the opposite base is very rare, and that of the two apices still rarer."

THE STATISTICAL STUDY OF PNEUMONIA has been distinctly promoted by the investigations of Norris³ (500 cases) and by those of J. L. Steven⁴ (120 cases). In Norris' series the mortality was 25 per cent., and 7 patients became phthisical. The details of his careful analysis cannot be entered into, but it may be noted that apical pneumonia occurred most frequently in the young. In the complicated cases the mortality was about 40 per cent.; in uncomplicated cases only about 10 per cent. The study illustrates the fact that the highly

¹ Atypical Pneumonia and Pulmonary Tuberculosis. *American Medicine*, Philadelphia, June 22, 1901. *Journal of American Medical Association*, July 6, 1901.

² *Maryland Medical Journal* (Baltimore), October, 1901. *Journal of American Medical Association*, October 19, 1901.

³ *American Journal of the Medical Sciences*. *Journal of American Medical Association*, June 15, 1901.

⁴ *New York Medical Journal*, August 10, 1901. *Journal of American Medical Association*, August 24, 1901, p. 536.

febrile cases are less dangerous than the slightly febrile ones, the former being an index of vital force. The greatest frequency of the disease was in the spring months, which agrees with other statistics.

Steven's review of 120 cases of lobar pneumonia and of the post-mortem appearances brings out the fact that it attacks chiefly those whose work exposes them to the weather. Of the male cases 19 were outdoor laborers. Again, the season is a potent factor, pneumonia being certainly most common in the colder months. A distinction should be made between acute primary and acute secondary pneumonia, the latter being connected with some old-standing lesion or the result of septic absorption or inhalation. In 120 cases there were only 18 cases exemplifying acute septic lobar pneumonia.

J. N. Hall's¹ report of 70 cases shows a death-rate of 34.3 per cent., viz. : 31 per cent. for the second decade, 46.1 per cent. for the fourth, and 43.7 per cent. beyond the fourth.

The Clinical Varieties of Pneumonia. Particulars of an unusual type of pneumonia are given by Charles Carey,² whose patient, a boy, aged eleven years, presented pseudomembranous exudates upon nearly all the mucous surfaces of the body open to inspection. There was also evidence of extensive passive pleuritis and probably of involvement of the gastro-intestinal tract throughout its entire length. The affection terminated in recovery by lysis. The pneumococcus was obtained in pure culture from the blood, the organs, and the exudate.

AN UNUSUALLY PROTRACTED ATTACK, with an intermittent type of pyrexia, is recorded by W. B. Warrington,³ the crisis being delayed until the nineteenth day. The profuse sweating, the progressive emaciation, and the hemorrhage suggested the existence of acute phthisis, but in the end this proved to be an instance of migrating pneumonia, perhaps influenzal.

FATAL INTESTINAL HEMORRHAGE was observed by Rathery⁴ in a case of double pneumonia. The entire colon presented punctiform hemorrhages.

INFLUENZAL PNEUMONIA. Four cases of protracted influenzal pneumonia in infancy furnish Frank X. Walls⁵ with an opportunity for describing the clinical features of the condition and of dealing with its diagnosis, prognosis, and treatment. The onset in these cases suggested

¹ Philadelphia Medical Journal, November 9, 1901.

² Sixteenth Annual Meeting of the Association of American Physicians. Journal of American Medical Association, May 18, 1901.

³ British Medical Journal, December 21, 1901.

⁴ Bull. et Mém. de la Soc. Méd. des Hôpitaux, July 25, 1901.

⁵ Journal of American Medical Association, August 31, 1901. Philadelphia Medical Journal, September 7, 1901.

gastro-intestinal infection, the affection of the respiratory tract coming on by degrees.

Good descriptions of influenzal pneumonia are contributed by Moorhouse¹ and by Howard Van Rensselaer.² The non-typical character of the local pneumonia of influenza; the lower average level of temperature, with remissions which are foreign to the temperature curve of croupous pneumonia; the absence of crisis, as a rule; the bronchitic rather than the pneumonic character of the sputum, which is rarely rusty, though often hemorrhagic; the spreading character of the consolidation or its occurrence in separate foci; the general analogy with bronchopneumonia, which, indeed, may coexist with it in addition to bronchitis itself; the liability of the serous membranes to implication, and the greater tendency in the lungs to a secondary tuberculosis—all these are familiar features in the pneumonia of influenza. Moorhouse points out that although the presence of Pfeiffer's bacillus identifies the affection as influenzal, yet all the pneumonias which may occur during influenza may not belong to that group.

Van Rensselaer regards influenzal pneumonia as a catarrhal pneumonia, with the influenza bacillus in pure culture; but in a proportion of cases there is a mixed infection. His clinical description deserves perusal in the original.

TYPHOID PNEUMONIA is a subject of practical as well as of pathological interest. An editorial in the *Journal of the American Medical Association*, November 16, 1901, points out that the typhoid bacilli have been isolated from pulmonary consolidations in typhoid fever a number of times after death; but writers, such as A. Fraenkel, are of the opinion that in most of these cases to the bacillus should be assigned only secondary importance in the etiology of the complicating pneumonia. In two cases of lobar pneumonia in typhoid fever, V. Stühlern³ isolated during life the typhoid bacillus from the sputum, which in both instances was markedly hemorrhagic. In one of the cases he found the bacillus also in the material withdrawn by means of a syringe from the consolidated lung—lower and middle right lobes. In addition, he found also the micrococcus lanceolatus.

In a third case diplococci coexisted with the typhoid bacillus, and there was a markedly hemorrhagic sputum—a fact emphasized by Curschmann and recognized by Dieudonné⁴ in the case he reports.

¹ *Journal of American Medical Association*, June 8, 1901, p. 1665.

² *Albany Medical Annals*, July, 1901. *Journal of American Medical Association*, July 20, 1901.

³ *Centralblatt f. Bakt.*, 1900, vol. xxvii. pp. 353–356. See Editorial note, *Journal of American Medical Association*, May 5, 1900, p. 1138.

⁴ *Centralblatt f. Bakt.*, 1901, vol. xxx. pp. 481–483.

The importance of these observations lies in the evidence they afford of the dangerous character of the sputum as a vehicle for the infection of typhoid fever as well as of pneumonia, and they point to the necessity for rigid disinfection of the sputum.

OTITIS MEDIA AND PNEUMONIA. Wilson¹ finds that otitis media exists in a considerable proportion of those who die from pneumonia in childhood and adolescence. The matter is one of sufficient importance to claim further inquiry. The relationship of the otitis media to the pneumonia may be: (1) Accidental—a child with otorrhœa developing pneumonia; (2) secondary to the pneumonia—infection through the Eustachian tube; (3) the otitis may be a primary manifestation of pneumococcus infection, a pneumonia appearing later; (4) an ordinary attack of otitis may give rise to general pyæmia, accompanied by pneumonia of septic type. Ear symptoms may be absent.

THE SIMULATION OF ACUTE PERITONITIS BY PLEUROPNEUMONIA appears to have been clearly recognized by Andral in 1836. H. L. Barnard² communicated several cases of this kind to the Clinical Society of London. J. H. Hayward referred to a case exactly the converse of Barnard's cases, in which a diagnosis of pneumonia with pleuritic friction prevented the performance of laparotomy. After death the pleura and lung were quite normal, but rupture of the appendix had led to peritonitis and to peritoneal friction sounds at the upper surface of the liver.

The Pathology of Pneumonia. Pneumonia, as recently stated by Stephen Smith Burt,³ is "an acute self-limited systemic infection."

The pathology of the pneumonic infection is dealt with by Foulerton.⁴ The specific organism has not hitherto been traced in the lower animals, but only in man, where it is found even during health on various mucous membranes, chiefly that of the mouth, but also on the nasal, conjunctival, the vaginal membranes, etc.; therefore, when pneumonia develops, we may suppose that the conditions of the host have changed, and it does not follow that the parasite itself has undergone any modification. Washbourn thinks that the pneumococcus exists in nature independently of animal life, but in a non-virulent form. Even in animals it proves infective when inoculated from man, although it does not seem to set up disease spontaneously; yet some animals, and particularly the rabbit, are more susceptible than others.

The simplest form of infection is the localized abscess or cellulitis

¹ Birmingham Medical Review, July, 1901.

² British Medical Journal, April 19, 1902.

³ American Medicine, April 26, 1902.

⁴ British Medical Journal, September 21, 1901. Philadelphia Medical Journal, October 12, 1901, p. 589.

resulting from a poisoned wound. Is lobar pneumonia the manifestation of a general infection or of one localized in the lung? Foulerton believes that the evidence points to the lung infection being primary and the blood infection secondary. In the lung itself fibrinous pneumonia is not the only result of pneumococcus infection. Congestive edema may be produced by it. Eyre has been able to show that the same strain of pneumococcus can, by varying the conditions of the experiment, be made to set up tissue reactions belonging to either the fibrinous or the cedematous group.

The influence of cold, which is clinically so prominent in the history of cases, must be admitted as likely to set up a temporary congestion favorable to the growth of various organisms, and particularly of the pneumococcus. Foulerton believes that the epidemic form of pneumonia is probably not due to the pneumococcus.

Complications of Pneumonia. **PLEURITIC COMPLICATIONS.** Primary effusion is probably not to be regarded as due to the presence of cocci within the pleura, but rather to the irritation of toxins emanating from the neighboring lung. In children the pleurisy itself may be primary, so it would seem, from the slender evidence of concurrent pneumonia in many of them.

EMPYEMA, as is well known, is due chiefly to two infecting agents—the streptococcus pyogenes and the micrococcus pneumoniae—but their incidence is very different in childhood and in the adult: 75 per cent. of the cases in adults are caused by the streptococcus pyogenes and 25 per cent. only by the micrococcus pneumoniae; whereas in children at least 75 per cent. of the cases were caused by the micrococcus pneumoniae and about 25 per cent. by the streptococcus pyogenes. Other serous membranes liable to infection are the meninges and the peritoneum.

PNEUMOCOCCUS MENINGITIS may be acute and purulent or chronic and serofibrinous, the latter form sometimes occurring primarily and perhaps by way of the nose.

Lazarus Barlow reports two cases of posterior basilar meningitis from which an organism was cultivated apparently identical with the micrococcus pneumoniae, but there were no other lesions.

PERITONITIS may also be serofibrinous or purulent, and is most frequent in children. Bryant reports three cases, two of which occurred in children. Pneumococcus peritonitis may be primary, when the peritoneum is the first structure to be involved, or secondary, when the peritoneum is infected as a complication of some other pneumococcus lesion; and it is possible, as suggested by Bryant, that some of the cases of so-called “idiopathic” peritonitis are pneumococcal.

ULCERATIVE ENDOCARDITIS is also liable to be determined by the pneumococcus.

PNEUMOCOCCUS ARTHRITIS, the knowledge of which has been so much advanced by Cave's observations, may be serofibrinous throughout or purulent from the onset, or first serofibrinous and then purulent. D. J. Milton Miller,¹ in reporting a case of this kind, refers to Cave's cases and to some of his conclusions. Miller's case got well without operation, thanks to local measures and subsequently to massage, etc. Cave, who holds that suppurative cases should invariably be treated by incision, flushing, and drainage—although this view is not universally adopted by surgeons—also believes that serous effusions would be most successfully treated by arthrotomy.

George Blumer's² exhaustive paper on bacteriology cannot be fully considered in this section, but the following statements are of general interest: The cases examined, including numerous cases of bronchopneumonia and lobar pneumonia, seem to show that in merely congested and œdematous lungs, as with bronchopneumonia, a general infection is frequently present. As in many of these cases no bacterial lesion can be found aside from the pulmonary one, it seems likely that the lungs are much more frequently the portal of entry in general infection than is usually supposed; and this may occur without any marked pulmonary lesions.

The Treatment of Pneumonia. Another year has lapsed without any marked progress. The rational treatment—that directed against the infective agents—still eludes us, and uncertainty still prevails as to the therapeutical principles which should guide our clinical action. There is, then, little cause to wonder that relative inactivity should have been the policy most in favor. But some excellent results obtained with carbonate of creosote seem to promise better things for the future.

A reservation unavoidably attaches to the use of any form of treatment. We cannot overlook the variable personal factor elsewhere referred to in connection with functional affections of the heart. Remedies or methods of general utility may be given a bad name by failure due to individual peculiarities in a given case. In advanced pneumonia active therapeutics is a hazardous experiment. The slightest impulse in the wrong direction must precipitate the end, and yet inaction on our part may deprive the patient of the possible chance which an effort in the right direction might give. The dilemma is of daily occurrence in practice, and helps to explain the hesitation felt by the most careful physicians and the continued prominence given to the question, "What is the treatment of pneumonia?" These points are forcibly illustrated by the difference of opinion between such authorities as Sir

¹ Philadelphia Medical Journal, January 25, 1902.

² Albany Medical Annals, August, 1901. Journal of American Medical Association, August 24, 1901.

William Gairdner and Sir John W. Moore on the most important drugs at our command—digitalis and morphine. Sir John Moore¹ recommends digitalis when the pulse is rapid and of low tension, with imperfect renal action. Sir William Gairdner² enters a protest against the larger doses as apt to cause nausea and vomiting, and has rarely used any digitalis, even in small doses, because there is no evidence or any argument tending to prove its efficacy. Almost more important is the question as to opium and morphine. Weighing all the pros and cons, Sir John Moore countenances the use of $\frac{1}{8}$ to $\frac{1}{6}$ of a grain of morphine in combination with strychnine in cases of heart failure with sleeplessness. It cannot be doubted that good results have frequently been witnessed from a timely administration of the sedative, and lives have often been regarded as saved by this method. On the other hand, Sir William Gairdner, probably in common with other physicians, has noted the occurrence of poisonous effects from even moderate doses of morphine administered at the height of the disease—a fatal result being clearly accelerated by the dose, cyanosis supervening, with slow, intermittent breathing, feeble pulse, and somewhat contracted pupils shortly after the injection.

Facts such as these do not allay the physician's anxiety. They impress the lesson that the active and the hopeful lines of treatment must be applied quite early, and that as the disease progresses we are more stringently limited to restorative measures the safety of which is beyond any question.

The inadequacy of the physical signs as an indication of the gravity of pneumonia is regarded by Andrew H. Smith³ as a strong reason for avoiding repeated examinations. The physician called in as a consultant may wisely base his advice upon the symptoms and the general aspect of the case rather than upon a personal examination.

The whole question of treatment is put by H. A. Hare⁴ in simple, unambiguous terms which will appeal to the practitioner :

“The physician's place is that of a watchman always, and of a therapist only when necessity compels. The patients in all acute infectious diseases may be divided into three classes—those who are so mildly ill that all they need is good care and little or no active treatment ; cases so malignant that nothing can produce a cure ; and a third class, between the first two, which is capable of cure only when the most skilful treatment is given. Again, pneumonia is an infectious disease, and runs a definite course, and no attempt should be made to

¹ *Encyclopædia Medica*, vol. ix.

² *Glasgow Medical Journal*, April, 1902.

³ *International Clinics*, 1901, vol. ii. p. 89.

⁴ *Journal of American Medical Association*, November 2, 1901.

influence its regular course by any line of treatment." As, however, complications arise the physician has opportunities to show sense and knowledge of therapeutics. The combating of dangerous symptoms which arise with the complications, and the strict support of the patient's condition and strength during the three stages—namely, the stage of hyperæmia or engorgement, the stage of consolidation or red hepatization, and the stage of resolution in cases where resolution is delayed—are the chief objects for the physician's attention. In the future, by the use of antipneumotoxin when perfected, the dangers and complications arising from an attack of pneumonia will be greatly diminished.

The physician may obtain an early opportunity of arresting the disease or of mitigating it by rest in bed, a calomel purge, a dose or two of Dover's powder, and some suitable diaphoretic, such as—

R.—Tinct. aconiti	℥ ^{xv} .	1
Tinct. opii camph.	fʒjss.	6
Sol. ammon. acetatis	fʒij.	12
Syr. zingiberis	fʒij.	12
Aque	q. s. ad fʒiv.	128

M. Sig.—One tablespoonful every two hours.

Or else to establish renal elimination the following may be of service :

R.—Spts. ætheris nitrosi	fʒjj.	8
Liq. ammon. acetatis	q. s. ad fʒiv.	128

M. Sig.—One tablespoonful every four hours.

Bleeding in the early stages may be resorted to in strong, middle-aged subjects with difficult respiration and heaving pulse, but not in feeble, asthenic patients. Instead of venesection, other sedative measures may be employed, such as the hot foot-bath, hot compresses to the chest if painful, or relays of cold compresses to check high fever. Some have found it useful to depress the circulation and produce diaphoresis by three or four doses of 3 minims of tincture of aconite, repeated every twenty minutes.

With the second stage comes the danger of cardiac weakness from the toxins liberated in the blood. If the heart can do its work there may be harm in the over-administration of cardiac stimulants. For guidance in this matter reliance must be placed upon the character of the heart sounds and of the pulse. Dilatation of the right side is announced by a weakening of the second pulmonary sound and a flagging pulse, and is soon made evident in the cyanosis, altered respiration, and general nervous depression. Strychnine alone may be given at first, but if the cyanosis and other symptoms should increase the stronger stimulation of digitalis must be associated with it, always bearing in mind that the preparations of digitalis, especially the tincture,

increase blood pressure by contracting the peripheral bloodvessels. If it be advisable to try and help the heart by digitalis while avoiding any increase in the blood pressure, the nitrites are available, either in a separate mixture, as—

R.—Spts. glonoini	℥ _{xv} .	1
Spts. ammon. aromat.	f℥ _v .	20
Tinct. cardamomi comp.	q. s. ad f℥ _{ij} .	64

M. Sig.—One teaspoonful every four hours.

Or in a combination, such as—

R.—Spts. glonoini (1 per cent.)	℥ _{xxv} .	1	66
Tinct. nucis vomicæ	f℥ _j .	4	
Tinct. digitalis	f℥ _{ij} .	8	
Tinct. gent. comp.	q. s. ad f℥ _{ijj} .	96	

M. Sig.—One teaspoonful every six hours.

¶ In conjunction with the cardiac treatment attention is also claimed during the second stage by the organs of elimination, and particularly by the kidneys. Perhaps, as stated by Danforth,¹ a case of pneumonia is not hopeless so long as the kidneys are up to their work. Hepatic stimulation should not be neglected, and careful attention should be given to the bowels and skin.

If the third stage, or that of convalescence, proceeds favorably and with no complications, treatment by drugs is unnecessary. If resolution is delayed and the cough troublesome the following may be given :

R.—Codeinæ sulph.	gr. vj.	36
Ammon. carb.	℥ _j .	4
Aq. camphoræ	f℥ _{j.3}	2
Syr. tolutani	q. s. ad f℥ _{ijj} .	96

M. Sig.—One teaspoonful every three hours.

The complications most likely to arise are pleurisy, pericarditis, endocarditis, and meningitis, which should be treated as independent diseases.

Safety from the dangers of drugs is the keynote of James C. Wilson's² "Observations on the Treatment of Croupous Pneumonia." His own practice, after a disappointing experience with specifics and serotherapy, is mainly symptomatic; but he adopts an important measure in the systematic administration of opium after a calomel purge. Tablets of 2 or 3 grains of Dover's powder are administered every two or three hours throughout the attack, so as to produce a slight, continuous drowsiness. By this means suffering is diminished, cough is to some extent controlled, the excitement and apprehension commonly seen in pneu-

¹ American Text-book of Therapeutics.

² Observations on the Treatment of Croupous Pneumonia. Philadelphia Medical Journal, November 2, 1901.

monia are allayed, and no evil effects are observed. Toward the close of the attack Dover's powder is given with diminishing frequency. Aconite and veratrum viride are never given, and digitalis only in response to particular indications: "In many cases strophanthus has answered a better purpose. As a rule, strychnine is given as a cardiac stimulant, and the nitrites, especially nitroglycerin, for the relief of the laboring right ventricle. These measures failing, with increasing signs of failure of the right heart, the development of small mucous râles, and cyanosis, venesection is practised. If pulmonary œdema occurs, atropine is given hypodermically, and many times has seemed to avert the fatal issue. Dyspnœa is regarded as an indication for the use of oxygen, care being taken that in the administration it is freely diluted with air. Nervous symptoms and delirium are to some extent controlled by the systematic administration of Dover's powder. They demand an increase in the quantity of alcohol. Ice to the head, cold sponging, or the cold pack are useful, and in young, robust individuals delirium tending to pass into coma is treated by cold effusions to the head and neck, repeated at intervals of three or four hours. These are often followed by marked improvement."

This passage is quoted in full, in view of the importance of the two questions as to the value of opium and as to that of an assiduous attempt to influence the symptoms by drugs. Wilson frankly admits that the statistics under this treatment are not satisfactory, the fatal cases averaging 36.56 per cent., but the returns were worse still when cold bathing and serotherapy were substituted. Wilson refers us to the recent article by Pel, of Amsterdam, on "The Treatment of Croupous Pneumonia Critically Considered," from which he has drawn many of the facts in his paper; and he quotes Pel's conclusion that "the less the physician interferes with the normal course of pneumonia the greater is the probability of a favorable termination."

Potassium bicarbonate has been found of great value by Ira B. Bartle¹ in conjunction with strychnine and hygienic treatment during the early stage. The temperature is reduced and the pneumonia apparently aborted.

Suprarenal extract is advocated by E. A. Gray² as a heart stimulant in pneumonia.

The measures recommended by Edward F. Wells³ are guided by some of the symptomatic indications. He believes in the early use of a mercurial and saline purge and of venesection to the extent of from

¹ Oklahoma Medical News, November, 1901.

² Medical Record, April 5, 1902.

³ Journal of American Medical Association, January 18, 1902. Philadelphia Medical Journal, p. 165.

500 to 750 c.c., in the administration of digitalis and hydrochlorate of adrenalin, and in the administration of nucleinic acid to promote leucocytosis, which he regards as favorable. All foods, including the milk, should be well salted, and saline injections administered freely and often, in order that chlorides be well supplied to the system. Oxygen and other heart tonics, such as strychnine and caffeine, camphor, and morphine, are valuable when specially indicated.

The hot mustard foot-bath followed by sponging, repeated at varying intervals, is one of the practical suggestions made by Stockton,¹ of Buffalo.

The essential points in Babcock's² paper are illustrated in the case which he reports. Pneumococcus pneumonia is not necessarily lobar; the gravity of the symptoms need not bear any relation to the extent of the pneumonic process, but rather to the virulence of the infection. With a pneumonia limited to scattered, small exudates, his patient suffered from paralysis of the vasomotors, with consequent capillary paresis and cardiac asthenia. Death occurred in less than three days from the invasion. The temperature was subnormal in the axilla—perhaps, he thinks, from capillary dilatation, causing rapid radiation and a deceptive reading of the thermometer. In these cases nothing is so efficient as full hypodermic doses of strychnine as a cardiac tonic, in $\frac{1}{30}$ or $\frac{1}{20}$ of a grain doses every two hours, and even hourly in very urgent cases. The administration, both by the rectum and subcutaneously, of physiological salt solution, aids in the elimination of toxins; in cases of cyanosis, blood-letting is undoubtedly of service at times, and promotes the action of the salt infusion. Finally, the inhalation of oxygen should be given freely, and if need be continuously.

An important debate was held at the fifty-second annual meeting of the American Medical Association³ on "The Relative Value of the Treatment by Cardiac Tonics and Stimulants and Cardiac Depressants, Respectively." De Lancy Rochester advocated the former with much cogency, while deprecating indiscriminately large doses of digitalis in the early stages. We should keep constantly in view the value of feeding and support, of elimination not only by the liver and bowel, but by the skin, and, if necessary, with the help of venesection and local treatment by leeching and wet or dry cupping, as indicated. The heart stimulants are strychnine, alcohol, or ammonium carbonate, and, in suitable cases, subcutaneous saline infusion. In a series of 168 cases this treatment gave a death-rate of $10\frac{1}{8}$ per cent. only.

¹ Medical News, December 28, 1901.

² American Medicine, June, 1901. Journal of American Medical Association, June 22, 1901.

³ Journal of the American Medical Association, November 9, 1901.

W. L. Dickerson, taking an opposite view, put in a plea for the abortive treatment of pneumonia by the use of cardiac depressants in the congestive stage. He places his chief reliance upon veratrum viride in preference to tartar emetic or aconite. From 2 to 5 minims of the tincture are given in peppermint water every thirty minutes to an hour until the onset of nausea, sweating, relaxation of the skin, and fall in the pulse-rate and temperature. Vomiting should be avoided, if possible, by keeping the patient quiet, or sometimes by small doses of laudanum. Later the dose may be continued, every two to four hours, as long as necessary. These measures are limited to the congestive stage. He believes that they lessen the amount of exudate, and therefore tend to cut short the attack.

The discussion of these papers elicited a consensus of opinion in favor of the supporting treatment, and Richard C. Moore testified incidentally to the value of carbonate of creosote, which had been advocated by Andrew H. Smith as almost a specific in bringing about early crisis.

The Specific Forms of Treatment. It is noteworthy that neither the serum treatment nor the saline infusion treatment have during the past year made any marked progress toward a practical adoption by the profession. William Porter,¹ however, whose formula of treatment is "conserve the strength, guard the heart, and diminish the toxins," believes in the utility of venesection followed by saline infusion.

The hypodermic saline infusion is regarded by F. Neuhoff² as a useful resource where the circulation is no longer sustained by other measures, but it is not available where pulmonary oedema is suspected, and is suitable only in selected cases. While stimulating the heart it increases the secretions, including that of the skin, moistens the tongue and throat, and lessens the delirium.

THE ANTIPNEUMOCOCCUS SERUM treatment of pneumonia has not been successful in the hands of G. E. Tyler,³ who reports a large number of cases and has carefully studied the literature. He doubts whether the serum has any effect upon the disease in the lung, but he believes that toxic symptoms might be prevented if large quantities of fresh serum were given before the pneumococcus appears in the blood.

J. N. Hall,⁴ in analyzing seventy cases, re-echoes Tyler's views as to the results of the serum treatment. He urges that no remedy will be found an unfailing cure, as pneumonia, like phthisis and some other affections, is a *modus moriendi* for a certain number of individuals.

¹ Interstate Medical Journal (St. Louis), September, 1901. Journal of American Medical Association, October 12, 1901.

² Medical Record, May 11, 1901. Philadelphia Medical Journal, May 18, 1901.

³ Journal of American Medical Association, June 1, 1901.

⁴ Philadelphia Medical Journal, November 9, 1901.

His own treatment often includes bleeding in suitable cases, ice-bags instead of poultices, Dover's powders instead of depressing hypnotics, ammonium acetate and sweet spirit of nitre more often than aconite and veratrum, strychnine every four or even every two hours in heart distress, in addition to alcohol and infusion of digitalis in heart weakness. He has also seen oxygen "tide over" a patient, but in the majority of cases he regards it as useless.

The experience detailed by George G. Sears¹ is a noteworthy installment in the literature of the subject, not only in the statistical sense, but because of the clinical analyses of the cases and of the conclusions derived from their study. Of his twelve cases nine recovered. Although he observed in some of them skin eruptions and articular swellings and pain, he does not think that the course of the pneumonia was prolonged by the treatment, but he is unable to put forward any strong evidence of its curative value.

VERATRUM VIRIDE has been highly successful in asthenic as well as in sthenic cases in the hands of F. G. Stevens.² He regards it as more efficacious in pneumonia than quinine is in malaria. Of fifty-four consecutive cases fifty recovered. He uses the following formulæ :

R.—Tinct. veratri viridi (Norwood's) f ʒj.
Vini ipecac. vel spts. ætheris nitrosi f ʒij.

M. Sig.—Ten drops every three hours in a little water, increasing one or two drops each dose.

Or,

R.—Tinct. veratri viridi (Norwood's) f ʒj.
Syrup. scillæ comp. f ʒij.

M. Sig.—Ten drops every three hours in gum water, increasing one or two drops each dose.

Or,

R.—Tinct. veratri viridi (Norwood's) f ʒij.
Tinct. aconiti radicis f ʒj.
Syrup. tolutani f ʒiv.

M. Sig.—Fifteen drops every three or four hours, increasing three drops each dose.

If the treatment by veratrum viride can reduce the mortality of pneumonia to 8 per cent., the sooner it is universally adopted the better ; but it is obvious from the result of the debate reported above that the profession is not yet convinced of its virtues, and the cautious attitude suggested in an editorial article in the *Therapeutic Gazette* on "The Limitations of Veratrum Viride in Pneumonia" is the only one we are warranted in assuming.

¹ Boston Medical and Surgical Journal, December 12, 1901.

² Therapeutic Gazette, November, 1901.

HYDROCHLORATE OF QUININE, which is soluble in thirty-four parts of water, is recommended by A. Pitzold¹ as a subcutaneous injection. He has used with success daily injections of $7\frac{1}{2}$ grains for the last three or four years, with marked improvement in the general condition of the patients.

CARBONATE OF CREOSOTE (creosotal), in 15-grain doses every two hours, night and day, in a mixture of glycerin and peppermint water, is favorably commented upon by W. H. Thomson,² who has treated eighteen cases. The drug is better tolerated by the stomach for prolonged periods than any of the other members of this group, such as creosote itself or guaiacol carbonate. The following formula is used by the author :

R.—Creosot. carbonat. \mathfrak{z} iv.
 Glycerini f \mathfrak{z} j.
 Aquæ menthæ q. s. ad Oss.—M.

Sig.—Tablespoonful in water.

The creosote treatment has also been advocated by Van Zandt,³ who has quoted the favorable testimony of others : 7.5 to 10 minims are to be administered every three hours or even more frequently during the anxious stage. In some cases, however, one drop every three hours should be enough.

Carbonate of creosote is preferred by H. W. Cummings.⁴ The first doses are of 10 drops every three hours, and increased 5 drops daily until the dose reaches 20 to 25 drops. Strychnine is used concurrently, beginning with small doses in the second stage. Of his twenty cases treated in this way none died.

L. Weber's⁵ nine cases recovered from their pneumonia, one of them dying subsequently of pre-existing heart disease. The average dose was 60 grains daily. The improvement in the patients' symptoms was most striking, and such as to suggest that the drug acted as a specific.

HOT BATHS have been used in pneumonia by A. Bormans.⁶ In the review of his paper it is stated⁷ that he orders them in bronchitis and pneumonia. Giapponne was the first to advocate baths of this temperature. Ortner reports excellent results from them in his *Manual*

¹ Deutsch. Arch. f. klin. Med. Journal of American Medical Association, October 12, 1901.

² Medical Record, February 1, 1902.

³ Practitioner (Nashville, Tenn.). Journal of American Medical Association, December 28, 1901.

⁴ Texas Medical Journal, December, 1901. Journal of American Medical Association, December 28, 1901.

⁵ New York Medical Record, November 2, 1901.

⁶ Giorn. delle Accad. di med. di Torino, July, 1901.

⁷ Journal of American Medical Association, October 19, 1901.

of *Therapeutics*, published at Vienna last year. The blood pressure usually drops slightly during the bath, but rises later, and surpasses what it was before the bath. The temperature may rise a fraction of a degree, and the pulse is slightly increased. In a few cases the blood pressure remained slightly below what it was before the baths, but the patient's euphoria and sweat were pronounced in every case. Contraindications are, of course, heart disease or arterio-sclerosis. Twelve cases were treated by Bormans, with one death from cerebro-spinal meningitis. The bath is used when the temperature goes above 39.5° C. (103° F.). Bormans places the patient in a bath-tub with the water at 40° C. (104° F.), first applying an ice-cap to his head and cooling the face with ice. As soon as the patient is immersed, water is added to raise the temperature of the bath to 44° C. (111° F.), and the temperature is maintained at this point for fifteen minutes, when the patient is returned to bed. The effect is extremely beneficial; the relief being almost immediate. The patient sweats profusely, and his agitated delirium is quieted.

MUSTARD BATHS (one pound into the child's bath-tub), associated with friction during immersion, which is to last about ten minutes, or until the skin becomes pink, have been suggested for the treatment of infantile pneumonia by L. Weber.¹

VENESECTION. Van Slyke² regards blood-letting as of value in some cases. He deprecates all depressing agents, including blisters and expectorants. Alcohol and hydrotherapy, strychnine and digitalis, and, when indicated, opium, are the remedies relied upon. He recommends digitalis to be substituted for strychnine when there is delirium and cerebral congestion. Plenty of water is needed as well as a nourishing diet.

PULMONARY TUBERCULOSIS.

The British Congress on Tuberculosis. The lion's share in the present report must belong to the subject of phthisis. The British Congress on Tuberculosis, which was held in London, July 22-26, 1901, was to an unusual extent eventful and productive. The number and the scope of the communications placed before it was so great that it would be impossible to review, let alone to criticise, them all; only a cursory survey of the more important among those belonging to this section can find room within these pages. Professor Koch's address, in which he declared his belief that bovine tuberculosis was not com-

¹ Post-Graduate. Journal of American Medical Association, September 21, 1902.

² Southern California Practitioner (Los Angeles), July, 1901. Journal of American Medical Association, August 17, 1901.

municable to man, was the great sensation, and led to the appointment of a Royal Commission to inquire into the question. The leading idea running through most of the sections of the Congress was the importance of the study of *prevention*, but although no separate section was allotted to therapeutics, many papers were contributed on questions of *treatment*. The special task laid before the Congress was to educate public opinion as to the importance of preventive measures and to promote the supply of sanatoria. For the profession itself nothing strikingly novel was to be expected from the flood of contributions on open-air treatment, sanatorium treatment, and home treatment. The principle and the details to which so much literature has been devoted are thoroughly well known to the professional reader; he may, however, still find much profit in a perusal of the originals.

The General Etiology and Pathology of Pulmonary Tuberculosis.

The Koch incident came as a surprise, and at a most unexpected moment. "*Causa victric diis placuit sed victa Catoni*:" Koch remained alone in his opinion. The various resolutions adopted by the Congress in favor of a continuance of the most stringent measures against the use of milk from tuberculous cows implied unshaken belief in the infectiveness of bovine tubercle in man.

This incident might, however, be regarded as an indication that the simplicity and directness of the bacillus theory may not remain as absolute as it has been in the past. While bacteriologists are induced by Koch's manifesto to confirm by fresh demonstrations the accepted doctrine as to the specific unity of the infecting agent, a tendency may be traced in the work of isolated observers toward wider pathological conceptions. Though there may not be different species of the bacillus, we have different races of the same species.

Hopes of a vaccination against tuberculosis are suggested to Ferran¹ by his conclusions from bacteriological study. According to him, Koch's bacillus has a necessary precursor in "the phthiseogenic bacillus," which is a modification of the bacillus coli, and which in turn develops into Koch's bacillus. Both these early forms are essential for the development of tuberculosis, and they are responsible for the pretuberculous cachexia and pneumonia.

THE RECOGNIZED VARIATIONS IN THE ACTIVITY OF TUBERCLE BACILLI must be taken into account as well as the individual constitutional factor. This is well brought out by Lartigau's² experiments. It introduces a fresh difficulty into the classification and the prognosis of cases, but it will also throw light into many obscure questions of

¹ Journal of American Medical Association, February 15, 1902.

² Journal of Medical Research, July, 1901.

clinical pathology. The varying contagiousness of phthisis is one of the most obvious corollaries of that proposition, which if confirmed will open up a new line for statistical inquiries into the contagiousness of the disease, such as that undertaken by E. L. Shurly.¹

MIXED INFECTION IN CHRONIC PULMONARY PHTHISIS. A. G. R. Foulerton² makes a clear distinction between chronic pulmonary tuberculosis and chronic pulmonary phthisis. This distinction lies at the root of all successful treatment. The cure of tuberculosis *per se* is to be expected from some future improvement of the tuberculin treatment. But the secondary infections are still more formidable than the tubercle itself, and for them a germ-free air and complete rest, by which we may hope to prevent any reinfection or any reinforcement of the original supply of bacteria, the tendency of which is gradually to lose virulence, are the most essential and hopeful indications.

HEREDITY IN ITS ETIOLOGICAL RELATION TO TUBERCULOSIS. On this point practically identical conclusions have been reached with the statistical method by J. Edward Squire³ and by Herbert Maxon King.⁴ The direct influence of heredity would seem to be considerably less than was formerly supposed. King, from a study of his 242 cases, entertains the belief that a relative immunity is conferred upon the offspring by parental tuberculosis, both in the direction of increased resistance and in that of a greater tendency to recover.

AMONG THE PREDISPOSING CAUSES OF TUBERCULOSIS AND SCROFULA a large share is allotted by Donald S. Campbell⁵ to an inherited syphilitic taint not directly in the family, but in the race; and he considers that a sufficient control of syphilis would do more than any other measure to prevent the spread of consumption.

A DEVITALIZED AIR TOXEMIA is assumed by C. Denison⁶ as a prime cause of tuberculosis, preceding and predisposing to bacillary infection.

The same thought must have inspired Arthur Ransome's paper "On the Need of a Standard of Efficient Ventilation," read in the State Section of the British Congress. Consumption is described as a "filth disease," and "air sewage" as being even more fatal than "water sewage." The highest standards of ventilation should be enforced at all work-places and all places of public assembly.

¹ American Medicine, August 24, 1901.

² British Congress on Tuberculosis. Philadelphia Medical Journal, November 2, 1901.

³ London Congress. Philadelphia Medical Journal, August 31, 1901.

⁴ Philadelphia Medical Journal, August 17, 1901.

⁵ Physician and Surgeon, Detroit and Ann Arbor, Michigan, May, 1901.

⁶ British Congress. New York Medical Journal, November 9, 1901.

THE RELATION OF ALCOHOLISM TO TUBERCULOSIS is regarded by T. N. Kelynaek¹ as partly a direct one, and partly, as stated also by Crothers,² an indirect one favoring the various predisposing toxæmias. The question is important in all its bearings. Absolute temperance is, in my estimation, the ideal course; but let us be practical and ever ready to recognize that the best rules must have their individual exceptions.

OVEREXERTION AS THE CAUSE OF THE OUTBREAK OR OF THE RELAPSE OF LATENT TUBERCULOSIS. This is the theme ably worked out, with illustrative cases, by F. W. Burton-Fanning³ in a paper on "The Etiology of Pulmonary Tuberculosis." It is usual for an indefinite length of time to elapse between the lodgement of the tubercle bacillus in the body and the manifestation of symptoms. Physical overexertion, which is a most powerful determining cause of the breakdown of the constitutional protecting agencies, was responsible in as many as 10 per cent. of Burton-Fanning's cases. Again, the predominant cause of many relapses in patients who have successfully passed through a course of treatment was overexertion. Over and over again recrudescence of the malady has been brought about by a tiring journey, by too long a day of shopping or sight-seeing, by allowing the calls of family or society to interfere with the prescribed hours of rest.

The Diagnosis of Pulmonary Tuberculosis. THE NOMENCLATURE OF THE DEGREES OF PULMONARY PHTHISIS. Uniformity is obviously desirable in classifying cases according to the severity of the condition, particularly when dealing with reports of the patient's state at the beginning and at the conclusion of any treatment. J. Edward Stubbert's⁴ suggested categories are likely to be useful because sufficiently broad. He proposes the term "pretuberculous" or "prebacillary," "incipient," "moderately advanced," and "far advanced;" and in connection with the results of treatment he recommends the expressions "apparently cured" (rather than "cured"), "arrested," and "improved." It is impossible in any one word to convey the description of the individual case, but the nomenclature advocated by Stubbert is free from the risk of conveying false impressions. It may, however, be said of the first group that the word "prebacillary" is often the expression of a pious wish rather than of strict evidence, many of the cases in question being already tainted with tubercle, which the tuberculin test alone may be able to reveal.

DIAGNOSIS. The detection of tuberculosis at its earliest stage is no longer impossible. Perhaps, as Pottenger suggests, it may in some

¹ Lancet, August 3, 1901.

² Journal of Tuberculosis, Asheville, N. C., July, 1901.

³ Practitioner, March, 1902.

⁴ Medical News, February 22, 1902.

future day be actionable if a physician should overlook it.¹ At present he is usually consulted too late. It is significant that Charles R. Upson² has been able to report upon 197 patients who called for treatment for other ailments. Trudeau laments the frequency of this disastrous delay.

G. A. Heron,³ who is also a believer in the treatment by tuberculin, adduces strong evidence from Eric France's experience at the Claybury Asylum in favor of the value of the test for diagnosis.

Arthur Latham⁴ likewise advocates the use of Koch's old tuberculin in small doses, repeated two or three times, if necessary, for the early diagnosis of cases where tuberculous lesions are suspected, but cannot be identified by any physical signs, the great indication being to secure the earliest stage for treatment.

It must be remembered that the test sometimes fails. Otis, of Boston, has recorded striking instances in point, and he has also obtained well-marked reaction in many cases of syphilis which were free from tubercle.

The possibility of a spread of the infection by the fine spray of cough having now been proved by demonstration, L. Napoleon Boston⁵ proposes a bacillary examination of the spray as a substitute for that of the sputum when sputum is not available.

The diagnostic value of the X-rays for the detection of early tuberculosis is still dependent upon a careful consideration of the clinical history and also of the local distribution of the shadows. This is the position adopted by Hugh Walsham (British Congress) in advocating the method. He does not despair of future possibilities in the direction of treatment and of cure by means of the rays.

Rectal temperature determinations have long been regarded as more reliable than those in the mouth or axilla. David Lawson⁶ devotes a paper to the temperature of phthisis, and repeats the advice given by many others to trust only to rectal readings as a safe guide in judging as to the amount and as to the form of exercise to be allowed. J. C. Braine-Hartwell⁷ also writes in the same sense. R. W. Philip,⁸ however, has satisfied himself that oral and axillary temperatures are sufficiently trustworthy if due care is taken, and many will be found to agree with him that the rectal method is undesirable, unnecessary, open

¹ Journal of Tuberculosis, Asheville, N. C., July, 1901.

² Medical Record, New York, June 20, 1901.

³ Philadelphia Medical Journal, September 21, 1901.

⁴ Lancet, December 28, 1901.

⁵ Journal of American Medical Association, September 14, 1901.

⁶ Scottish Medical and Surgical Journal, January, 1902.

⁷ Philadelphia Medical Journal, December 21, 1901.

⁸ Practitioner, May, 1902, p. 500.

to fallacies, irksome, and as being apt to disturb and fatigue the more feeble patients.

THE PHYSICAL SIGNS OF PULMONARY SCLEROSIS as regards auscultation and percussion are yet ill-understood. G. Arthrand¹ believes that the diminution in the vibration of the chest wall and the dulness on percussion are progressive, and that the respiratory sounds also undergo definite variations during the four stages which he recognizes in the tubercular process. In the first stage they are feeble and of senile type, and in the second exaggerated and puerile. In the third stage the respiration has ceased to be vascular and is becoming discontinuous, with râles and predominance of the souffle, and the latter disappears completely during the fourth. Arthran's estimate of the relative durations of the stages is somewhat arbitrary: "When the sclerosis is less than five years old the souffle predominates; between five and ten the souffle is of normal intensity; between ten and fifteen there is obscurity, and from fifteen to twenty extreme obscurity or absolute disappearance. Palpation, percussion, and auscultation therefore give different results, according to the age of the "scrofula of the lungs."

The Treatment of Pulmonary Tuberculosis. PROPHYLAXIS. *Prevention from the clinical standpoint* is discussed by John A. Robison, B. G. Long, S. A. Knopf, and others, who remind us of many important practical details which have been before us in the literature of previous years, and need not be dwelt upon in this report.

State Prevention. The preventive measures to be adopted by the individual and by the State have continued to receive increasing attention. "Should the State Undertake the Prevention and Treatment of Consumption?"² and "Should there Not be International Co-operation for the Sake of Prevention?"³ These are two of our "questions de haute politique;" the third is that of notification, with all its consequences.

The notification of tuberculosis is persistently advocated, and its adoption on a small scale in various centres has so far worked well. Various papers on this subject were submitted to the Congress, and among them those by MacDougall, of Manchester, and Herman Biggs, of New York.

The advantages of a system of closer inspection are demonstrated by the results of Coates' investigation in connection with the infectiveness of houses. A good, well-ventilated, and lighted waiting-room in a

¹ Progrès Méd., Paris, October 5 and 12, 1901. Journal of American Medical Association, November 16, 1901.

² Nathan Raw. Practitioner, July, 1901.

³ Sir Hermann Weber, *ibid.*, and Samuel Bernheim, British Congress. Philadelphia Medical Journal, August 31, 1901.

hospital for consumptives was found to be free from bacilli, while bacilli were present in the waiting-room of a railway station, and were abundantly present in well-kept houses, where patients had either spat on the floor or into their handkerchiefs.

However earnestly we may take up the work of prevention, the duty of the State and of the citizens to the consumptive bread-earner will have to be faced, as stated by Sir J. Burdon-Sanderson, for a long time yet to come while preventive measures are beginning to take their effect; and we shall have to provide for "the treatment and management of advanced cases"—a subject to which Zwar has made a contribution in the *Intercolonial Medical Journal*, October 20, 1901.

Compulsory notification, which Hermann Biggs informs us was first introduced tentatively in the State of New York in 1893, coupled with a system of gratuitous sputum examinations, has a direct bearing upon the duty in question. In Germany, the State insurance laws provide that all workmen earning not more than £100 per annum shall be insured against sickness and old age, and the sanatoria are partly supported from these funds.

The Climatic Treatment. THE MEDICAL CLIMATOLOGY AND THE CLIMATIC TREATMENT OF PHTHISIS were well represented by important papers. S. E. Solly dealt with the altitude cure in Colorado, and Norman Bridge, who is not a believer in altitude, with the climate of Southern California. C. T. Williams and Burney Yeo, respectively,¹ contributed valuable addresses on the classification of climates and of the classification of cases in connection with their suitability for the various climatic cures. Lannelongue, Achard, and Gailard related the results of their observations on the "Comparative Influence of Climate and Individual Resistance in Experimental Tuberculosis." When contributions analogous to those of sanatoria are provided for tuberculized animals, life is prolonged; but climate has less influence than the constitution or individual "soil" in determining the course of the disease.

THE INFLUENCE OF HIGH ALTITUDES UPON PULMONARY HEMORRHAGE, so often discussed, has been studied by S. G. Bonney² in connection with the climate of Colorado. Hemorrhage, though less likely to occur, is apt to be more severe and associated with greater shock than at the sea-level, and its avoidance demands the closest adherence to the physician's instructions.

The Open-air and Sanatorium Treatment. The year's literature on sanatoria is too voluminous to be analyzed in these pages. In the

¹ British Medical Journal, July 27, 1901.

² Medical News, October 12, 1901.

broader lines of the subject nothing essentially new has to be recorded, though each paper is suggestive in some of its details.

As stated by Arthur J. Richer, of the Laurentian Sanatorium, St. Agathe des Monts, Province of Quebec, the approved principles are rest, outdoor life, overfeeding, and medical supervision. *Exercise*, which Brehmer, of Goerbersdorf, had freely recommended before Dettweiler, of Falkenstein, insisted upon absolute rest as the first and earliest essential, is now one of the most responsible matters to regulate in each patient's case, and cannot be dealt with by anyone to greater advantage than by the experienced sanatorium physician.

It is well that, like all else that is good, the sanatorium idea should have its critics. The strictures of those who, like Edward Dean Marriott,¹ question the wisdom of the policy of multiplying sanatoria instead of combating the disease at its roots by sanitation, are harmless, nay, they are of distinct service in stimulating us to furnish additional proofs that well-conducted sanatoria are not, as some think, breeding centres for tuberculosis.

THE MORALE IN SANATORIUM LIFE. Among the queries brought forward for consideration in connection with sanatorium treatment, by T. Clifford Allbutt,² the last is not the least important. In the opinion of not a few observers it is the most important question of all, and it has a bearing in individual cases upon the choice between "home cure" and "sanatorium cure." We must face the fact that the conditions of the rest cure and of sanatorium life, as they are generally understood, are not, particularly for the young, a promising training for the active life to which they are intended to restore the patients. Clifford Allbutt asks the following questions:

"1. Can mixed infections be recognized from fever curves?"

"2. Can we distinguish between economical (*wirtschaftliche*) healing and complete (*wissenschaftliche*) healing? If so, what is the mean term of residence for the economical healing of early cases?"

"3. How long in certain active cases, say from 6 to 8 per cent., is a febrile patient to be kept in bed in the reasonable hope of recovery? For instance, in a public sanatorium are we justified in retaining patients who have been confined to bed for six months, five months, or even for four months?"

"4. What estimates of improvement and what rules of prognosis can be based upon physical signs alone?"

"5. Is multiple tuberculosis, for instance, in lung and testicle, too hopeless a condition for a public sanatorium? How far is it comparable with an equal extent of mischief in one organ?"

¹ Lancet, January 25, 1902.

² Ibid., November 9, 1901, p. 1255.

“6. Of what use, if any, is massage?”

“7. Of what use, if any, is hydrotherapy?”

“8. Are special pulmonary exercises appropriate at certain stages of progress? and if so, when and under what conditions?”

“9. Must we repair the body at the expense of the life of the mind? Can we not give even some educational value to the sanatorium besides the medical drill of it?”

THE HOME CURE FOR TUBERCULOSIS. Detailed accounts of the home cure have been furnished by I. H. Hance, Robert H. Babcock, Leonard Weber, Lawrence F. Flick, Homer M. Thomas, H. Meffert, and others. All are worthy of careful perusal, though they can only be enumerated here. Inferiority of climate has been shown not to be an obstacle to its successful adoption. Even from London, Hector Mackenzie¹ is able to report excellent results from the open-air treatment carried out within the town; and similar testimony has been forthcoming from other large towns in the United Kingdom notorious for their raw climate and smoke-laden atmosphere.

San-baths of one-half hour to two hours' duration, on the Veldes principle of total exposure, and *respiratory exercises* are included in the treatment which Anders recommends in the “home cure.” Deficiency of sunlight is one of the inevitable drawbacks to the home cure in towns, which not even phototherapy can entirely make good.

What are the Relative Advantages of “Home” and of “Sanatorium?” This question, which is asked every day, too often has to be answered with reference to the personal circumstances of the patient rather than on its own merits. Various writers have again taken up its discussion with a fulness of detail which this report cannot emulate. The immense majority of the profession need no convincing that from the purely physical aspects of the treatment, and apart from any influence it may exercise in other directions, the capabilities of sanatoria are quite as superior to the best resources procurable at home as the facilities afforded by hospitals for the treatment of any severe illness surpass those of a private house.

There is, too, in the novelty of the situation for the patient a leverage, both physical and moral, which is capable of great effect if skillfully handled, and which no other method can supply. Of our “home advantages” one thing only I believe must absolutely be preserved—the privilege of individual attention received and the consciousness that it is given. Hard-and-fast rules might be too rigidly enforced; the personal factor should be paramount in the treatment as it is in the disease. Perhaps the happiest way to enforce the rule is to convince

¹ Practitioner, July, 1901.

the patient that it has in some measure been modified to suit his own requirements. Consummate art is needed in governing both sanatorium and patient, and these functions cannot without disaster be delegated.

SANATORIA AND THEIR RESULTS. R. W. Philip's¹ opening paper at the British Congress illustrates by striking cases and temperature charts the efficacy of the sanatorium treatment, which he regards as the only proper treatment. He estimates that its duration in the average case should be at least six months. The proportion of satisfactory results should reach a percentage of from 50 to 60 per cent., or even more with selected cases.

The principle to which Philip again refers as a desirable adjunct to the sanatorium system—that of farm colonies for the convalescent—has much to recommend it, and it is hoped may be soon brought prominently to the notice of the profession and of the public.

A tent colony was originated two years ago by William K. Robinson,² on sandy soil in a wooded plain situated thirty miles from Denver, and has yielded satisfactory results, even during the exceptionally cold winters. This remarkable fact deserves the attention of the authorities engaged in providing sanatoria for the poor.

E. L. Trudeau's estimate of possible cures is higher than Philip's,³ viz.: 75 per cent. This is on the assumption that cases are treated early, but the vast majority apply too late to secure the best results. We are reminded again that our urgent duty is an early diagnosis, which Trudeau obtains with tuberculin; but the attitude of this pioneer of the open-air treatment as regards selection of cases also shows that he recognizes its limits.⁴

The average duration of residence in sanatoria for pulmonary tuberculosis is estimated by Thompson Campbell⁵ at six months. This corresponds to about two admissions per bed each year. The minimum of useful treatment is three months, but others need longer than this. Patients still unable to get up after six weeks' trial in bed should not be kept. Among the conditions unsuited for admission he refers to continued pyrexia, to severe tuberculous infection, with bad antecedents, to the laryngeal, and to the albuminuric cases. As the early recognition of the disease is essential to its speedy cure, the gratuitous examination of sputum is among the duties of the authorities.

Engelmann's⁶ report on the German sanatoria, in the *Eighteenth Volume of the German Imperial Health Department*, gives statistics of 49 sana-

¹ British Medical Journal, December 14, 1901.

² Journal of American Medical Association, December 21, 1901.

³ Ibid., May 18, 1901, p. 1416.

⁴ Medical News, June 29, 1901.

⁵ Lancet, December 7, 1901.

⁶ Journal of American Medical Association, November 16, 1901.

toria in Germany for eighteen months, ending in June, 1900. The total inmates were 6273, and the number of beds 4000. At present there are 60 sanatoria, with 5000 beds. The value of the report as illustrating the results which may be expected from sanatorium treatment is an excuse for the length of the following quotation :

“ Fully 67 per cent. of the dismissed patients were able to resume their occupation, 7 per cent. engaged in a new occupation, 15 per cent. were able to partially resume work, and only 11 per cent. were incapacitated for earning their livelihood. The total number improved has increased by 3 per cent. in the last fiscal year, owing to a more careful selection of cases. Improvement occurred in 95.2 per cent. of those in the first stages of the disease ; in 89.9 per cent. in the second, and in 71.5 per cent. in the third stages. The working capacity of the dismissed patients rapidly decreased, until after six months only one-fifth were able to continue their occupation, and after three and one-half years four-fifths had died or become entirely incapable of working. One-fourth of the total number had died after one and one-half years had elapsed, and more than 50 per cent. after three years. The proportion is a little better among those dismissed as capable of resuming work. At the expiration of one year after dismissal more than 50 per cent. were still working. After the lapse of two years the majority were dead or incapable of earning their livelihood. After the lapse of eighteen months only 75 per cent. were still alive, and after three years less than 50 per cent. The proportion of cases of persisting improvement is somewhat better among those dismissed as able to resume work.”

A good number of those patients in the second or third stages of the disease who had been dismissed as unimproved and incapable of working were able to resume their occupation after a certain length of time, probably thanks to the improved hygiene learned at the sanatorium. The most important general conclusion is the necessity of diagnosing and treating the disease in its earlier stages. Early cases are nearly always able to resume their occupation. The ability to work is retained for more than four years in only about 25 per cent.

Sanatorium Treatment and the Study of the Cure of Consumption. THE LIMITATIONS OF OPEN-AIR TREATMENT. In spite of the loud praises of the open-air treatment and of sanatoria heard at congresses and elsewhere, and of the active education of the laity to a strong belief in their efficacy, hard facts do not quite bear out our hopes. Some bad cases recover under sanatorial hygiene ; others wait in vain for that result, and waste both time and opportunity. Moreover, the sanatorium treatment, to be efficacious, entails considerable expense in proportion to the duration of the cure ; and as the latter is at least of six months, while the numbers to be relieved are exceedingly

great, the matter becomes a serious question of finance, and meanwhile many are debarred from any form of adequate treatment. Pulmonary tuberculosis may sooner or later be within the reach of the therapeutics, and capable of being checked rapidly in its early, acute stage, and perhaps cured, when not too far advanced, within comparatively short periods; but a too exclusive reliance upon the open-air cure might retard that achievement by discouraging therapeutical research.

IS SANATORIUM TREATMENT THE ULTIMA RATIO? When all has been said in recognition of the excellent work of sanatoria there remains still the irreducible minimum of failures, of partial recoveries, and of protracted treatment ending in temporary amendment only. Are we to conclude that where sanatorium treatment fails nothing else can succeed? or to be relieved of our office of healers of the sick because pure air is now recognized as an essential condition for recovery? I believe that our active treatment should keep abreast of our ever-growing therapeutical opportunities, with the definite purpose of helping those cases which are refractory to sanatorium treatment, and of shortening the period of treatment of those which it is slow to cure.

We may regard as a hopeful sign the recognition by some authorities of the fact that judicious measures of treatment may be most profitably combined with open-air treatment pure and simple. This principle is admitted by Arnold C. Klebs in his remarks on "Specific Therapeutics in Pulmonary Tuberculosis." Some of our more recent remedies are capable of being valuable adjuncts to the open-air treatment.

SPARE WARDS IN GENERAL HOSPITALS should, according to Robinson,¹ be set apart for the reception and treatment of phthisis, both as a humanitarian duty and also for the important object of medical education. With this opinion I heartily concur. Phthisis should not be out of sight and out of mind, but constantly facing us in the most active hours of our clinical work until we have achieved that which is no man's business but our own—the safe and comparatively rapid cure of the disease. I believe that if this object were eagerly pursued at each great clinical centre throughout the world considerable advance would soon be made in the successful treatment of the disease.

THE "THOROUGH" OR "HOSPITAL" TREATMENT. The following propositions will best explain the views briefly indicated in a note submitted to the British Congress "On Time-saving Methods of Treatment," etc.:

1. Open air, night and day, is invaluable, and with few exceptions indispensable, at all stages of the disease, and should be a *sine qua non* in any special wards devoted to its treatment.

¹ British Medical Journal, February 22, 1902.

2. The sanatorium treatment is adequate in all convalescent and apyrexial cases, and should be secured in each case at the earliest opportunity, provided any important symptom needing attention is not thereby debarred from the opportunities of treatment.

3. The ideal sanatorium would be one combining with the best climate all the resources of a hospital as regards medical and surgical skill, and experience and nursing and medical appliances; and this would be, *par excellence*, the place for the more difficult phases of treatment.

4. In view of the improbability of such a combination, those patients who need active treatment might with advantage be admitted for a while, as a preliminary to sanatorium treatment, into special departments attached to general hospitals.

5. The hospital treatment of phthisis in the past has been a perfunctory routine worse than useless. The object now in view is to bring to bear upon the treatment of consumption the richest and widest resources, the most strenuous perseverance, the cumulative and progressive experience, the expert skill, and the advanced methods which can only be provided at large and thoroughly equipped hospitals.

6. There is a finality in the perfection of pure air and hygiene: we cannot expect them to do more than they have done; yet much more needs doing, and for it we must look elsewhere. If only as much, not to say "more," unremitting attention were to be bestowed upon the individual case as is customary at the best sanatoria, it would be found that considerable and often rapid improvement in the catarrhal and pyrexial stages can be obtained in a majority of patients by a judicious combination of various modern methods, which, though they may not be curative singly, yet are productive of strikingly good effects; and that many would, after a course of two to six weeks, be in a convalescent condition likely to derive the highest advantages from sanatorium opportunities. This is, in my experience, the present prospect.

7. In the future a systematic cultivation of the "thorough" and "progressive" treatment, which should be on the "qui vive" for each latest practical advance in medicine and hygiene, would inevitably lead to a rapid improvement in our therapeutical methods. It will probably commend itself to the physician as a higher duty than that of watching, with folded arms, the now fairly well-defined limitations of the open-air treatment, as well as its slow-acting but marvellous powers henceforth to be enlisted in the service of any form of treatment.

The Further Treatment of Phthisis. In the treatment of phthisis there can be no going back. The solid progress represented by the hygienic method is not likely to be ever given up by any school of therapeutics; but there should be no standing still, no permanent pitch-

ing of the tent, even though this be in the most perfect open air. It will be time to rest when we have as much command over tubercular fever as over that of malaria.

The medicinal therapeutics of the past were wholly inadequate, and doubtless sometimes harmful. It is useless to look back; but there lies before us the immense future, and even at the present time we hold golden opportunities which lie unutilized.

THE RATIONAL METHODS. The object of the treatment of pulmonary tuberculosis is to destroy the bacillus as completely and as rapidly as possible when preventive measures have failed to obviate its implantation. For this there are two high roads open to us and three rational methods. The bronchial system is clearly the way of access to the sputum and to its bacilli, and perhaps also to the most superficial bacillary deposits when ulceration has denuded them of their cellular coverings. Short of destroying the latter by caustics—a method which lies beyond our present speculation—the only approach to the deep-lying breeding-places is by the long and circuitous way of the blood- and lymph-vessels. All that seems to be required is a harmless and efficient germicide and the means of introducing it in sufficient quantity.

The two highways are, then, the trachea and the venous system, and the methods the intratracheal method and the intravenous method. Both have been tried, with results which are entirely encouraging when we consider that they have been pioneer attempts, with a limited choice of germicidal agents. In the future the choice will be constantly increasing, and the suitability of the new remedies may soon be far in advance of that of the present ones.

The tracheal route is available for two methods: (1) The inhalation method, and (2) the injection method.

The inhalation method has long been practised, but until recently only in a comparatively useless fashion, by means of sprays. Putting aside the question as to the efficacy of the solutions intended for this mode of administration, considerable doubt has been thrown upon the principle itself. The coarser sprays are certainly not inhaled into the depths of the lung, and probably do not penetrate beyond the larynx. Even the finest sprays are in all probability precipitated onto the mucous membrane during their descent down the trachea and larger bronchi by the rotatory or dispersing movements imparted to the inspiratory current at the glottis, and considerable skepticism has been rightly expressed as to their value. The same objection does not hold good in the case of true gases and vapors, and it is with them alone that the inhalation method at present under consideration is concerned. Their volatility enables them to accompany the inspired air into the recesses of the lung, and the only question which remains is that of

their potency and concentration when they have reached the level where their action is needed. Oxygen and ozonized air are the only gases in common use, but various vapors have been employed for which antiseptic or even germicidal virtues have been claimed. Of the last of these it must be said that their efficacy as inhalations has but a limited scope. They have no penetrating power, and even the secretions which the bronchi may contain could not be affected by them except in its most superficial layers.

The injection method possesses greater possibilities. If a suitable quantity of a sufficiently powerful germicide could be injected into the bronchi the entire bronchial contents might be rendered inert as carriers of infection to the lung itself or after expectoration to other individuals. This is precisely the advantage which Colin Campbell claims for the intratracheal injection of izal and glycerin, which will be presently described. It cannot be gainsaid that this in itself would be a great achievement; but it is also possible that some fluid might be discovered which was capable of soaking the tissues to an appreciable depth. More than this could hardly be expected. The limitations of the injection method are analogous to those of the inhalation method. The tubercular deposits lie beyond their reach.

The intravenous route is the only one leading to the tissues themselves and to the deposits which they contain, and for that reason the intravenous method has immense capabilities. The objection that the tubercular nodule is extravascular deserves to be considered, but it cannot be advanced as a reason for withholding a treatment which brings the remedy nearer the disease than any other. The results which it yields are a sufficient answer to any merely theoretical criticism. It is enough that the method is already a success; the choice of some more efficacious agents than those now in use may safely be left to the future.

The intravenous method in its most promising form—that of the bulky injections of Maguire—was described in last year's PROGRESSIVE MEDICINE, and little need be added to it except a reference to the use of solutions of protargol by Ewart, in a paper on "Time-saving Methods of Treatment in Phthisis," with a preliminary note on the "silver treatment" of phthisis by intravenous injections of protargol.¹

INTRAVENOUS INJECTIONS OF SODIUM CINNAMATE. In a further report of cases treated by intravenous injections of sodium cinnamate, Albert Mann² gives seven additional instances, the favorable course of which has confirmed his belief in the efficacy of Landerer's treatment. He attributes its virtues to the leucocytosis which it sets up, and locally

¹ British Congress, 1901.

² Philadelphia Medical Journal, March 1, 1902.

to the substitution of an active aseptic inflammation, with rapid cicatrization, for a septic and inactive one. Some of the patients were given as many as a hundred injections in the course of a year.

T. Hensser,¹ of Davos, on the strength of further observations in sixty additional cases, declares his belief that Landerer's treatment is not only harmless, but most effective in promoting cicatrization.

Hetol injections were used by Gidionsen,² but he concludes that while they do not surpass the open-air treatment in efficacy, they are capable of doing harm. The pyrexia and the general condition are not improved, and weight is lost. Max Wolff,³ who gave an extensive trial to *hetol* and *igazol* in inoculated animals and in man, obtained only negative results from both methods.

INTRAVENOUS INJECTIONS OF CACODYLE have been practised by Anelli⁴ in an advanced case of phthisis, with considerable advantage. The bulk of the sodium cacodylate injection was 1 cubic centimetre, and the quantity of the drug 5 centigrammes. No unpleasant symptoms were produced, and within a month the patients' condition had markedly improved.

E. Franck⁵ also testifies to the value of the *hetol* treatment in early cases. He believes that open air and overfeeding are not sufficient to cure uncomplicated phthisis.

IZAL INTRATRACHEAL INJECTIONS IN PHTHISIS. Among the solutions available for intratracheal injections, the first place, as regards efficiency, is claimed by Colin Campbell⁶ for solutions of izal. Price's glycerin, which he finds does not, like ordinary glycerin, irritate the bronchi, is the vehicle. "Izal" itself is an emulsion containing 40 per cent. of izal oil, which is not a pure substance, but a mixture of oxidized hydrocarbons intermediate between the C_6H_6O series and the CH_4O series, insoluble in water and non-volatile at the ordinary temperature.

The bactericidal properties of izal had been studied by Klein⁷ and by Sheridan Delépine.⁸ The results of a more recent investigation by Delépine and F. J. H. Coutts are quoted by Campbell. They show that the addition to tuberculous sputum of $\frac{1}{125}$ part of izal oil one hour before injection suffices to render the sputum innocuous to guinea-pigs,

¹ Corresp. Blatt. f. Sweizer Aerzte, January 1, 1902.

² Deutsch. f. klin. Med., Band lxxix., Heft 3 and 4. Philadelphia Medical Journal, August 31, 1901.

³ Deutsch. med. Wochenschrift, July 11, 1901.

⁴ Rif. Med., July 19, 1901. Epitome, British Medical Journal, September 21, 1901.

⁵ Therap. Monats., December, 1901.

⁶ Transactions of the British Congress on Tuberculosis, 1901. British Medical Journal, February 22, 1902.

⁷ Experiments in Izal, 1902.

⁸ Medical Chronicle, September, 1895.

but infection ensued when the strength was only $\frac{1}{250}$. These experiments form the basis of Campbell's method.

The method of large medicinal injections through the larynx had previously been demonstrated by him in 1894,¹ and was again demonstrated at the recent congress. One or two or even three ounces of fluid can be injected at one sitting, but so bulky an injection is not necessary.

He has long abandoned the use of oil as a vehicle as open to grave objections. Glycerin, instead of blocking the bronchioles, produces a copious flow of mucus which washes out the tubes. Moreover, it mixes with the expectoration, while oil fails to mix, and substances such as menthol, guaiacol, creosote, benzol, etc, can be kept in solution in it by heat.

Formerly Campbell used, among other remedies, *creosote*, of which he succeeded in injecting as much as 6 drachms (22 c.c.) per day, though the effects of so large a dose were not desirable. His present method consists in making two izal injections daily—the first to wash out the lungs, the second “to get to the bottom”—or even a single injection. The “bulk” varies from 6 to 16 drachms, and the strength is 1 of commercial izal in 10 of glycerin, with the addition of flavoring agents such as menthol, thymol, and the like. After each injection the patient is directed to take deep inspirations, and after a while copious expectoration sets in. No cases were appended to the paper, though reference was made to cases of cure. Campbell is among those who believe that open air alone is not sufficient for the cure of phthisis; and that as prevention is the great aim, “the destruction of the germ before expectoration is the most reasonable method of checking its spread.”

FORMIC ALDEHYDE INHALATION AS AN AID IN THE OPEN-AIR TREATMENT has been practised by Crowry Muthu,² Isle of Wight, in fifteen cases, with good results. He used the drug both in the gaseous form and as formalin. The gaseous inhalation was carried out either by the dry method with the Alformant lamp (tabloids of paraform vaporized on a metal tray over a methylated spirit lamp) or by the moist method, in which a steam generator is added to the apparatus, and this is the more efficacious method. The inhalation is continued for one, two, or three hours, with the doors and windows closed.

2. The moist method has two modes of application, either (*a*) on a respirator charged with 6 to 10 per cent. solution, to be worn four to six hours daily, or (*b*) at the same strength in the form of a fine spray or in a nebulizer with glycerin. Both methods are combined for the

¹ Transactions of Royal Med.-Chir. Society, vol. lxxviii.

² London Congress on Tuberculosis. Philadelphia Medical Journal, August 31, 1901.

same patient. Of the fifteen patients treated five (all men) recovered completely, no bacilli being found after a period of three to five months' treatment. Seven were almost cured, except a few dry crepitations and bacilli, and three were little benefited. Special attention should be given to keeping the lamp clean.

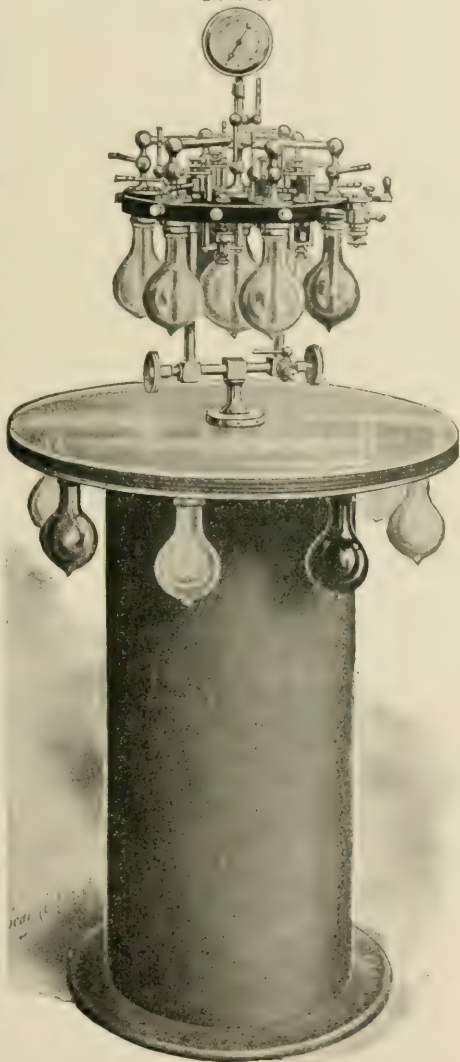
"ALABONE'S CURE" BY INHALATION. The publication in the *British Medical Journal*, December 28, 1901, of Edwin W. Alabone's "Lachnanthes Cure," by his son, provides the profession with an opportunity of forming some idea of the capabilities of a method which has met with some influential support among the laity. The accompanying illustration shows the apparatus employed. The principle is to compress the air, or air and oxygen, in the cylinder, to conduct it through the tubes into the flask, comminuting the fluids therein, and finally to produce the comminuta in such manner as the case may require for ultimate transmission through the remitters for inhalation.

The volume, quantity, and density of the vapor can be regulated by the governing valves which control the entrance of air to the generator.

The following are samples of the inhalants :

R.—Formic aldehyde	M _{xx} . increasing to 3j.
Menthol	gr. x.
Eucalypti	M _v .
Mollueine	3j.
R.—R. lachnanthes	M _{xx} .
Creosote	M _{iv} .
Pinus canadensis	M _{xx} .
Viscidine	3j.

FIG. 1.



For hemorrhage, in addition to internal medication :

R.—Hamamelidis	℥j.
Terebinth.	℥j.
Viscidine	℥j.
R.—Hamamelidis	℥j.
Renaglandin	℥j.

“Mollucine” is practically a glycerin of low specific gravity, and “viscidine” a preparation of hydrocarbon oil.

The Hygienic Methods of Treatment. ACTIVE RESPIRATORY AND MUSCULAR EXERCISE IN PHTHISIS. I discussed in last year's PROGRESSIVE MEDICINE (Vol. III., p. 43) the opposite principles of the “rest cure” and of the cure by “physical exercise,” both of which had been overdone, and had concluded against a protracted immobilization and in favor of rest tempered with muscular activity. The Nordrach idea of stimulating the circulation and respiration by graduated walks is perceptibly gaining ground over the “liege-kur.” Exercise of this kind is a much-needed tonic for the mental as well as the visceral nervous system, and a saving clause in the demoralizing idleness of the *far niente* period. Pulmonary ventilation is a question for separate discussion. Harry Campbell¹ has recently urged that the dyspnoea which belongs to phthisis affords sufficient respiratory activity, and he deprecates as harmful any special exercises. The same view is taken by Norman Bridge, who is in favor of resting the diseased lung by strapping the chest or by injecting nitrogen. C. F. Larsen² more closely agrees with me when he says that sanatorium treatment does not always pay sufficient attention to exercise, including breathing exercise. While forced inspiration should be avoided, the lung should be cleared as much as possible by systematic expiration. Muscular hygiene and exercise and respiratory exercise both enter into the “thorough treatment” which I advocate, but they need to be most carefully apportioned to the requirements of individual cases.

A much larger field belongs to *respiratory gymnastics* in connection with the prophylaxis of phthisis. On this subject Albert Abrams³ latest contributions should be studied. An increased development of the lung may be obtained “by acting on the cutaneous sensory nerves ; by forced voluntary breathing ; by developing the muscles of respiration ; by converting costal into diaphragmatic breathing, and, conversely, diaphragmatic into costal breathing ; and, finally, by eliminating a definite group of synergetic muscles concerned in inspiration.”

¹ British Medical Journal, November 23, 1901, and Lancet, November 16, 1901.

² Nordiskt. Med. Archiv. (Stockholm), 1901, ii., 2. Journ. of American Medical Association, November 2, 1901.

³ American Medicine, March 22, 1902.

THE TISSUE-REST CURE. The prevalent method of resting patients suffering from phthisis has received important theoretical support from an unexpected quarter. Robin and Binet's views on phthisis were referred to in last year's report (September, 1901). While respiratory capacity is diminished the total pulmonary ventilation is enormously increased, the CO_2 production increasing upward of 60 per cent., and the total amount of oxygen used increasing by some 70 per cent., while the quantity of oxygen absorbed by the tissues is sometimes increased 90 per cent. "Consumption," then, is the correct word; the disease is an active, "consuming" process, and its pretuberculous stage must be viewed as one of irritable and augmented rather than of depressed vital action. Starting from these propositions, Robin and Binet¹ now address themselves to the logical therapeutical conclusions. They localize the oxygen hunger in the tissues themselves, and they argue that prophylaxis would consist in modifying the soil in the direction of restraining super-excitation in metabolism. The writers have made a study of a large number of drugs and methods, including cod-liver oil, sodium arseniate, potassium arseniate in small doses, sodium cacodylate, and some others, and which all tend to diminish respiratory interchanges. Arsenical compounds, of whatever character, when used in larger doses seem to exercise rather a stimulating influence on tissue changes. Thus the dosage of such drugs should under no circumstances be above a certain amount.

Among *drugs which prevent tissue waste* Soulier² refers to those of the coffee-kola group as drugs of nutritive force capable of bringing the alimentary reserves into action and of promoting the utilization of the circulating albumin rather than the fixed albumins, in contradistinction to the true "antidestructive" tissue savers, which diminish the process of excitation and hinder molecular change.

In diseases such as tuberculosis, characterized by increased consumption of oxygen and increased production of carbon dioxide, arsenic and cod-liver oil act as tissue savers by limiting metabolism, and hence are antidestructives. On the other hand, the drugs comprised in the coffee-kola group seem to excite nutrition, and to be themselves oxidizing agents. The practical points brought forward by Soulier are of interest in connection with Robin and Binet's pathological theory.

THE PROPER MANAGEMENT OF THE TUBERCULOUS LUNG is an important subject upon which opinions still differ. Norman Bridge³ advocates complete rest for the lung and the avoidance of straining cough. He recommends patients to cough at the end of a long expiration,

¹ Bull. de l'Acad. de Méd., No. 3, 1902.

² Lyon Méd., March 30, 1902.

³ Journal of American Medical Association, January 4, 1902.

to diminish the air pressure thrown upon the lung. He also discusses the practical questions of posture, and thinks that it is best for the patient to sleep with the sound lung uppermost.

PNEUMATIC MASSAGE is the name given to a method invented by Breuillard,¹ of St. Honoré les Bains, for which he claims the combined actions of hydrotherapy, of various electrical methods, and of manual massage.

The dry pack and the wet pack administered in succession, followed by a light shower-bath, are strongly recommended by H. Meffert.²

The routine administration of cod-liver oil, of opium derivatives, and of coal-tar antipyretics is condemned by H. Arrowsmith.³ Cod-liver oil is harmful in the measure in which it starves the nitrogenous metabolism of its oxygen.

The Diet and the Digestion. DYSPEPSIA AND PHTHISIS. The stomach is the organ upon which all others must humbly depend—a fact too often disregarded. In planning to cure phthisis my first care would be to relieve the gastro-intestinal catarrh, my second to train up the digestion from lighter to stronger and more abundant food, and my third to scrupulously watch over and, if possible, maintain the gastric regularity and efficiency thus secured. This is the indispensable foundation for that which I have ventured to call “the thorough treatment,” in contrast with the disregard of the stomach itself, which too often prevails, thought being given only to the amount of food which it can be made to carry, for the sake of a temporary gain in body weight, and at the risk of the patient’s most precious resource. Too many who fall into consumption because their digestion had long been failing, and their stomachs dilating, fail to obtain any special treatment, and others who had sound stomachs may develop dyspepsia and dilatation as a result of the “cure.” Hitherto the feeding of our patients has sometimes been managed only too well, but, alas! not wisely. No physician is to be trusted with the conduct of the “thorough treatment,” whether in ward or sanatorium, who may not be fairly regarded as an expert in gastric treatment. To get our patients well a physiologist is wanted as well as a cook.

THE DIETARY OF PHTHISIS. In the literature of this subject no fresh departure has to be noted. Here, too, the pendulum is swinging back from some of its extreme positions, as the reader will judge.

OVERFEEDING. The conclusions foretold by plain common-sense as to the effects of forced feeding in pulmonary tuberculosis have been scientifically confirmed by Bardswell, Goodbody, and Chapman’s⁴ com-

¹ British Congress. Philadelphia Medical Journal, August 10, 1901.

² Deutsche med. Wochenschrift, May 9, 1901.

³ Medical News, October 12, 1901.

⁴ British Medical Journal, February 22, 1902.

parative study of cases of pulmonary tuberculosis and of normal individuals. As the lungs are found not to improve any more rapidly upon forced feeding than upon generous diet, they would replace the method of indiscriminate stuffing of all tuberculous patients by a systematic dieting of the individual subject. Although in healthy persons overfeeding will lead to an increase in weight, yet this is only at the cost of marked impairment of general health and of the digestion. The conclusion is obvious that in invalids who have so far improved as to have regained or even passed their highest known weights we should avoid a mode of diet which is detrimental even to the strong.

The superalimentation of Broca and Debove is condemned by Candido¹ as unpractical; inefficacious, as the pulmonary lesions do not improve, though the patient may gain weight; and harmful because, as Letulle and Rendu have both shown, it causes dyspepsia and even more marked loss of appetite.

THE TREATMENT OF TUBERCULOSIS BY NITROGENOUS SUPERALIMENTATION. The priority in regard to the urea treatment practised by H. Harper² has been claimed for S. G. Dixon, of Philadelphia, by Seneca Egbert.³ Dixon, however, always used the subcutaneous method, and small doses only.

Samuel Bernheim⁴ explains the beneficial results of Richet and Héricourt's raw-meat cure by assuming a transformation of the tuberculous soil deficient in acidity into an arthritic soil with excess of acid. This change may be effected by other means, and in particular by saturating the system with *phosphate of creosote* or *phosphoric acid*. He administers the phosphate in doses of 2 grammes every two days. He prefers this method to an exclusive meat diet, which deprives the patient of so much valuable and varied nutriment.

MEAT ALBUMIN OR MYOSIN is recommended by Forbes Ross.⁵ It can be made either by mincing the meat and expressing it, or by the cold-extraction process with saline solution, and subsequent flavoring. It may also be used after coagulation by heat.

ZOMOTHERAPY has been put to the test in animals by C. Fränkel and G. Sobernheim⁶ with so negative a result that they discarded the matter as unworthy of further experimentation. If, as contended by others, it is of use in man, we must be shown whether we should attribute its action, with Chantemesse, to increased assimilating power; or,

¹ Brazil Med., June 1, 1901.

² Lancet, March 9, June 15, and December 7, 1901.

³ Ibid., February 22, 1902.

⁴ British Congress. Philadelphia Medical Journal, August 24, 1901.

⁵ British Medical Journal, October 12, 1901.

⁶ Berliner klin. Wochenschrift, July 15, 1901, No. 28.

with Maragliano, to a stimulation of the organism to the production of antitoxic agents; or, lastly, whether Richet is right in considering that meat juice contains substances retarding bacillary growth.¹

The *anorexia of phthisis* is treated by J. Hobbs² with large doses of "persodine" (persulphate of sodium), viz.: two tablespoonfuls a day. None of the patients suffered from diarrhoea, and they all improved in weight.

Serum Therapy. THE THERAPEUTIC AND DIAGNOSTIC VALUE OF TUBERCULIN was discussed at the British Congress by well-known authorities, including Koch himself, Heron, Douglas Powell, Osler, Fränkel, C. T. Williams, McCall Anderson, Eric France, and others. Opinions differed greatly as to its value in treatment; less so as to its diagnostic use. Koch stated his belief in the diagnostic injection as a valuable and harmless method, provided it was small enough (0.1 mm. for weak patients, to be repeated only after complete defervescence). Therapeutically, tuberculin was of great value in early, uncomplicated cases, and often curative in them. In more advanced cases it was necessary to wait until the temperature became normal. The treatment, if necessary, should be extended over considerable periods, with intervals of from three to four months, until the injections gave no reaction. The open-air treatment should be carried out simultaneously.

C. Denison³ tabulates his ten years' experience in a large number of cases with Kleb's tuberculin and antiphthisin, Mumford's asses' serum, Fisch's antiphthisis serum, T. R. Hirschfelder's oxytuberculin, von Ruck's tuberculin and his watery extract. The best results were obtained with the watery extract. Out of forty-five cases thus treated twenty-eight, or 62 per cent., are living in apparent immunity, forty of these apparently cured, 49 per cent. much improved, and only 11 per cent. retrograded.

F. M. Pottenger⁴ is a strong advocate of the value of tuberculin in treatment. He points out in his exhaustive study of the subject that the usefulness of the culture-products is restricted to recent tuberculosis in the incipient stage, but that they are powerless to remove dead tissue or that which has been newly formed. Their action should always be reinforced by every other means at command. When the cases are managed properly the proportion of cures is greater than when culture-products are not used. As the latter produces an immunity which pro-

¹ Editorial Philadelphia Medical Journal, August 10, 1901.

² British Congress. Philadelphia Medical Journal, August 24, 1901.

³ Journal of Tuberculosis (Asheville, N. C.), April, 1901. Journal of American Medical Association, June 1, 1901.

⁴ Therapeutic Gazette, Detroit, Mich., January 15. Journal of American Medical Association, February 8, 1902.

fects the patient from relapses, permanent cures result more often than from hygienic and climatic treatment alone.

G. A. Heron¹ is also a staunch supporter of the therapeutic value of tuberculin.

Maragliano's² report in the year closing in June, 1901, of the results of treatment by his antitoxin, which is levelled at what he calls "toxiosis"—that is, the harmful influence of the toxins of the bacillus—is to the following effect: 130 out-patients were treated; 36 were clinically cured, including 17 with fever and destructive processes—with a cavity in 3; 58 were improved and the disease remained stationary in 31. In the remaining 5 the disease progressed. None of the advanced cases treated in the institute were cured. It is impossible for the antitoxin to cure without the assistance—the reinforcement—of the organism. When the latter is unable to afford this assistance the antitoxin is comparatively powerless. It is also unable to cope with the toxins from micro-organisms other than the tubercle bacillus.

In Cioffi's³ experiments, out of a batch of inoculated guinea-pigs none died which had subsequently been treated with Maragliano's serum. Clinically, improvement almost amounting to a cure was obtained in several patients; but, according to Cioffi, the serum is effective only against the tuberculosis, and is contraindicated in secondary infections.

Goetsch⁴ gives the experience of ten years, with a total of 224 cases; but of these only 175 are suitable for statistics, some having died early, others being still under treatment. Of these 125 (71 per cent.) were discharged cured after an average duration of 198 days' treatment; the other 50 gave up the treatment too early for any results. Bacilli were demonstrated in 88 of the 224 cases. These remarkably favorable results may be due to the fact that only fever-free ("uncomplicated") cases are ever treated by Goetsch with tuberculin. He begins with a dose of 0.0001 mg., or, if this causes reaction, 0.00001 mg. is used. If the latter also causes reaction, he uses 0.001 mg. T. R., and after a dose of 0.1 mg. T. R. is reached he goes back to the old tuberculin, and gradually increases the dose until, if possible, 1 gramme is used at a dose. Reaction should never be produced, and the patient should always remain at rest for twenty-four to forty-eight hours after an injection.

¹ Philadelphia Medical Journal, September 21, 1901.

² Gazz. degli Osped., Milan. Journal of American Medical Association, September 7, 1901.

³ Gazz. degli Osped., Milan, January 5, 1902. Journal of American Medical Association, February 8, 1890.

⁴ Deutsche med. Wochenschrift, June 20, 1901. Philadelphia Medical Journal, August 31, 1901.

Boyd Cornick¹ reports favorably as to the use of tuberculin for diagnosis, and in early cases he has had good results therapeutically.

Sanatorial methods combined with tuberculin have been found by J. Petruschky² to be the best mode of treatment, and he expects from it 100 per cent. of cures in the first stage and 40 to 50 per cent. in the second stage.

THE USE OF DRUGS IN PULMONARY TUBERCULOSIS. W. R. Huggard's³ remarks are of much value in connection with his large experience of the effects of the Alpine altitude climate. While recognizing that there is no specific drug, and no drug useful in all cases, he bears testimony to the practical value of judicious medication :

1. The first point is the treatment of the *digestion* and of the stomach and bowels by suitable drugs and diet.

2. *Pyrexia* will often yield to absolute rest, bodily and mental, with open air. In other cases defervescence may be hastened by 1 to 3 grains of phenacetin in combination with quinine and salicin, and sometimes arsenic—a treatment which may be continued for months. Salipyrin is the only other antipyretic recommended except for occasional use. A reduction of the sensitiveness to febrile reaction on various provocations is a gain, and this is to be attained by arsenic, strychnine, and salicylic preparations.

3. A tendency to *hemoptysis*, which, according to Huggard, is increased, as well as that to pulmonary inflammation, by creosote and by guaiacol, is diminished by the lime salts, the terebinthinates, and the balsams, as well as by minute doses of morphine.

4. To check *excessive cough* and "dry the lungs" is a delicate task. The balsams, tar, and the terebinthinates diminish, and the latter also loosen the secretion, which minute doses of morphine ($\frac{1}{120}$ to $\frac{1}{160}$ grain) render more tenacious. Apomorphine ($\frac{1}{20}$ to $\frac{1}{16}$ grain) loosens without much increasing the secretion. Heroin and dionin are well spoken of. Huggard praises the inhalation of formaldehyde, having used it with good results for three years. It tends to lessen the purulent secretion and to change it to mucus, bacilli becoming less numerous or even disappearing. Formalin (a 40 per cent. solution of formaldehyde) is to be used in the strength of 2 to 3 per cent. in rectified spirits, or later up to 8 per cent., or even double that strength, with the addition of some flavoring essential oil. Of this 5 to 10 minims, renewable every twenty minutes, are placed in a muzzle inhaler; but owing to the irritating effect on the eyes and nose this should be placed below the nose,

¹ Texas Medical News, December, 1901.

² Berliner klin. Wochenschrift, February 3, 1902.

³ British Congress. Philadelphia Medical Journal, August 31, 1901.

and can then be worn from two to four hours a day. A little chloroform may be added if the cough be very irritable, but Huggard finds that if not too strong it diminishes pharyngeal and laryngeal irritability. It tends also to diminish pyrexia due to toxins. Terpin hydrate, oil of cinnamon, mytol, the balsams, the lime salts, creosote and its derivatives, except the carbonate of guaiacol, which Huggard finds inert, are other remedies available.

5. *Syphilis* is often a complication in phthisis. Small doses of the perchloride of mercury then act as a tonic; or mercurial ointment may be used.

Iodine is best administered as the iodide of ethyl, and may be combined with formaldehyde inhalation.

In conclusion, drugs need not be used unless for definite indications, but the latter often arise, and are apt to be multiple.

THE TREATMENT OF SPECIAL SYMPTOMS. Anders speaks well of the effect of 10-minim doses of oil of sandal-wood on sugar every three or four hours, to allay the irritable *nocturnal cough* of phthisis. To save the night's rest he recommends patients to practise recumbency during the day in association with deep breathing.

Oil of erigeron, in 5-minim capsules every two, three, or four hours, has been found of use in the *hæmoptysis* of tuberculosis by Anders.

The *subcutaneous injection of gelatin for hæmoptysis* was employed in two cases by A. Hammelbacher and O. Pischingre.¹ About 120 c.c. of a 2.5 per cent. solution was injected and the injection repeated. The characteristic sealing-wax or india-rubber-like taste was noticed by the patients for some hours after the injection. The authors are not convinced that the improvement which was noted in the hæmoptysis was entirely traceable to the gelatin, but at any rate the injections were harmless. In two other cases the same treatment seemed to be beneficial, and they consider that its adoption may be recommended. I have not applied this method in hemorrhage from the lung, but from experience of the clinical history of the latter a resort to this method would seem to be unnecessary in the generality of cases. Nevertheless, our patients occasionally show a marked hemorrhagic, almost hæmophilic tendency, which no drugs seem to influence. In these cases if suprarenal extract should also fail the gelatin treatment might be tried with all due precautions.

The *pyrexia of phthisis* should, according to F. Kohler,² be checked as soon as possible, to secure the advantage of outdoor life and exercise. Pyramidon, a dimethyl-amido-antipyrine, has proved in his hands the best antipyretic.

¹ Münchener med. Wochenschrift, December 10, 1901.

² Ibid.

IZAL IN THE TREATMENT OF PHTHISIS. L. W. Tunnicliffe¹ describes the good results he has obtained in four classes of cases. Early cases without excavation or pyrexia, but with crepitations and a history of or a tendency to hemorrhage, improved greatly, and the sputum became free from bacilli. The second class included cases of fever, with consolidation or softening. Here, also, improvement followed in the general and pulmonary condition, and diarrhœa was checked, with a simultaneous diminution in the aromatic suphates. The third group consisted of cases in an advanced and chronic stage, and the fourth of two cases of foul basic cavities. Much benefit was gained chiefly in the latter group.

The treatment had a minimum duration of twelve weeks, and was in all cases associated with the hygienic treatment. It consisted in the administration of izal in two forms simultaneously. Capsules containing from 2 to 10 minims of izal oil, with about 5 minims of cod-liver oil, were given by the mouth after meals once or twice a day for three days, followed by one day's pause, but not more than 15 minims of izal oil per diem; and, in addition, the patient was directed to sleep with an izal lamp burning all night by the side of his bed.

Tunnicliffe states that, as compared with carbonate of guaiacol and of guaiacolate of piperidine, izal has the advantage of being cheap as well as efficacious. The best results are to be obtained with it in cases of active pulmonary tuberculosis and of old cavities with abundant fetid expectoration. It seems to exert a beneficial influence in cases in which diarrhœa is present, whether with or without lesion of the intestine. In those cases in which the bronchitic element is well marked it is less useful. My own experience is limited to one case in which the internal administration of the drug was well borne and apparently beneficial.

ICHTHYOL may be taken in capsules after meals, three times a day, with excellent results, according to Charles F. Spangler.² Its use may be continued indefinitely, and does not exclude the administration of other agents if needed; but during acute exacerbations other remedies, such as carbonate of guaiacol, may be substituted. I have been satisfied with the progress of patients taking ichthyol continuously, and I regard it as an important addition to our list of remedies.

The efficacy of creosote treatment of Sommerbrodt depends upon the dose. Large doses are well tolerated by the kidneys, and have been found most beneficial. A. Burroughs³ gives 60 to 100 minims thrice daily in cod-liver oil, whiskey, or cream, and 15 to 20 minims by

¹ Lancet, 1902.

² Proceedings of the Philadelphia County Medical Society, January, 1902. Journal of American Medical Association, January 18, 1902.

³ Philadelphia Medical Journal, June 22, 1901.

inhalation in hydrocarbon oil daily. He insists upon the necessity for a pure creosote freed from carbolic acid, etc., by double distillation from beechwood tar. The hypodermic use of one part creosote in two parts sweet almond oil is also of service.

GUAIACOL CACODYLATE in a solution of sterilized oil is used as a hypodermic injection by F. Barbary and M. Rebec,¹ of Nice, with satisfactory results.

THE TREATMENT OF TUBERCULOSIS WITH UREA is strongly advocated by Arthur H. Buck,² who reports cases either cured or treated, with good results. The originator of the method, Henry Harper, of Nottingham, has a further paper in the *Lancet*, December 7, 1901, confirmatory of his previous conclusions and of those of A. H. Buck, to the effect that urea is a food and stimulant, and produces no increase of the urea excreted by the kidneys. Harper states definitely that urea is only of value in tuberculosis, where Koch's bacillus is the predominating microbe. Failure of the urea treatment he regards almost as a differential test for tuberculosis and for mixed infections.

LECITHIN is recommended by H. Claude and A. Zaky³ to be taken in 5 cg. pills, six times a day. The remedy is absolutely harmless and of undoubted benefit in increasing progressively the coefficient of the utilization of nitrogen and in lessening the elimination of phosphorus. Huchard⁴ has used lecithin with advantage in diabetes, anæmia, chlorosis, tuberculosis, and neurasthenia. It was first prescribed by Gobley in 1846. It causes marked increase in weight and reduces the excretion of uric acid.

ANILINE. Eva Abramovitch,⁵ in her Montpelier thesis, recommends the inhalation of 20 per cent. freshly redistilled aniline in saturated boracic acid solution (with a little menthol, and gradual increase in the strength of aniline), to be inhaled twenty to thirty times every half-hour perseveringly until all signs have vanished. From an accidental draught of crude aniline she had discovered that pure aniline is harmless and absolutely destructive to Koch's bacillus, and productive of hyperleucocytosis when inhaled. It may also be used internally or by inunction. The clinical results obtained have been encouraging, and with healthy heart, nervous system, and kidneys only functional disturbances have arisen from an overdose.

¹ British Congress. Philadelphia Medical Journal, August 10, 1901.

² British Congress on Tuberculosis. Practitioner, July, 1901. Philadelphia Medical Journal, September 14, 1901.

³ Presse Médicale, Paris, September 28, 1901.

⁴ Journal des Praticiens, July 13, 1901.

⁵ Journal of American Medical Association, November 9, 1901.

PIG BILE AS A CURE FOR TUBERCULOSIS. J. G. Willis¹ successful experience must call attention to a theory which promises almost too much to be true—that deficiency of the bile-salts is the probable predisposing factor in tuberculosis, and that fatty foods are contraindicated in its treatment. Willis finds that glycerin agar-agar impregnated with bile salts loses in part or entirely its special feeding power for Koch's bacillus, and that clinically marked improvement results from prohibiting all fatty foods, including cod-liver oil, cream, etc., and kept the patient on a strictly but abundant nitrogenous diet, with the idea of starving the bacillus.

THE TREATMENT OF SCROFULOSIS AND TUBERCULOSIS BY INUNCTIONS OF COD-LIVER OIL. B. Rohden² claims for "dermosapol" that it is completely absorbed by the skin. Its composition is 50 per cent. deodorized cod-liver oil, with balsam of Peru and oil of cinnamon, lemon, and thyme, combined with lanolin, glycerin, and an alkali. It is rubbed into the chest and back in the morning, and into the abdomen, buttocks, and limbs at night. About 100 grammes are required for ten or twelve days. For five years past he has obtained excellent results from this method in scrofulous and tubercular affections in children.

RECENT THERAPEUTICAL SUGGESTIONS. The action of currents of high frequency on tubercular toxins, according to E. Margazalli and V. Maragliano's³ investigations extending over four years, is to largely lessen their toxicity; but therapeutic antituberculosis serum does not lose its antitoxic power.

The bactericidal effects of Tesla's currents and of the X-rays is studied by Zeit in an elaborate paper.

Chisholm Williams⁴ reports most favorably upon the clinical efficacy of electrical currents of high frequency and tension. Improvement takes place in every direction, including the bacillosis, which greatly diminishes after an initial increase. Of forty-three cases, forty-two gained weight and lost most of their symptoms.

The ultra-violet rays possess bactericidal powers which hitherto have not been available for the deeper tissues. The efficacy of the ultra-violet rays for the treatment of skin diseases reported by Hugh Walsham⁵ perhaps contains some element of promise in this direction.

George G. Hopkins⁶ has treated ten patients with most encouraging

¹ Lancet, February 8, 1902.

² Therap. Monats., Berlin, August, 1901.

³ Journal of American Medical Association, August 24, 1901.

⁴ British Medical Journal, October 12, 1901. Philadelphia Medical Journal, November 2, 1901.

⁵ Lancet, February 1, 1902.

⁶ Philadelphia Medical Journal, September 21, 1901.

results by means of exposures behind a screen of blue glass to the light from a 50-ampère electric lamp fitted with a 20-inch condensing lens. In every case cough, expectoration, temperature, and sweating have been relieved within the first few days. The appetite also has rapidly improved.

The action of blue light has been investigated by G. Kaiser,¹ who reports some remarkable results as to its power of penetration and the depressing influence exercised upon the bacilli within the chest. He concludes that (1) the blue light kills tubercle bacilli, (2) it acts strongly as a resorbing agent, (3) it also possesses a local sedative action almost amounting to anaesthesia, and (4) its chemical rays pierce the body sufficiently strongly to take effect upon deep-seated bacilli.

The Postural Treatment. Schenk's² elaborate method of treatment illustrates the extent to which clinical therapeutics can be worked in the service of a mere theory. His starting point is the view that the tendency to phthisis depends, as contended by Benecke, upon a relative cardiac insufficiency leading to defective circulation through the lung, and that those who suffer from pulmonary hyperæmia as a result of valvular disease are comparatively immune. Passive hyperæmia of the lung seems to him to be the condition to be aimed at, and he endeavors to bring it about by gravitation as a result of raising the foot end of the bed or couch and of applying warmth to the chest by means of a vest of india-rubber tubing through which water circulates at a temperature of 113° F., while the rest of the body is lightly clothed, so as to contract the superficial arterioles, and of frequent periodical cold spongings of the feet, hands, and abdomen. This treatment by reclining is kept up continuously excepting for the meal times. It is found that the cough is much lessened, as well as the expectoration which comes up chiefly after the night's sleep. No increased tendency to hemorrhage has been noted, but one is hardly surprised to learn that after a few days a systolic murmur is apt to appear at the apex, with accentuation of the pulmonary second sound. This Schenk takes to be proof of the desired hyperæmia having been occasioned, and he finds that a separate coil arranged so as to circulate cold water over the cardiac area causes the murmur to disappear. The same therapeutical principle appears to have been advocated by Schian³ in 1899.

A detailed criticism of this unusual method is hardly required, for it is not likely to meet at the present time with imitators, particularly as Schenk is compelled to guard his patients against the damp outer

¹ Wiener klin. Wochenschrift, 1902, No. 7.

² Ibid., July 6 and 13, 1901. British Medical Journal, September 28, 1901.

³ Deutsche militärärzt. Zeit., February, 1902.

air in rainy or misty weather, and to restrict the lying out in the open air to days of fine, dry weather.

The treatment by subcutaneous injections of silver nitrate along the course of the vagi, introduced by Thomas J. Mays, has already been reported upon in PROGRESSIVE MEDICINE. Mays contributes a fresh paper to the *Philadelphia Medical Journal* for August 24, 1901, which contains a full account of the method and of its technique.

The treatment by pleural injections of nitrogen, we are informed by Lemke,¹ has now been performed in 350 cases. Its beneficial results are most noticeable (1) in acute cases in which fever, cough, and expectoration are much diminished; (2) in hemorrhagic cases, which may be cured of their hæmoptysis; (3) in cases with large cavities, for obvious reasons. But in all cases the tendency to dissemination of tubercle is lessened by the compression, and the treatment does not interfere with the approved hygienic cure.

THE OPERATIVE TREATMENT OF TUBERCULAR CAVITIES of the lungs has been the subject of thirty-two communications since 1895, according to A. Berliner.² The results have been disastrous. Nevertheless, he concludes that surgery has a small but promising sphere in the extensive removal of ribs as a means of promoting contraction and healing.

William Le Moyné, in his remarks on "The Surgical Treatment of Pulmonary Tuberculosis," at the thirty-first annual meeting of the Medical Society of California, Sacramento, April, 1901, refers to four chief lines of action: (1) Aspiration of cavities and injection of drugs into them; (2) pneumotomy, or the incision and drainage of cavities; (3) pneumectomy, or the excision of diseased areas; and (4) the obliteration of the cavity by causing the lung to collapse over it. Of all these operations it may be said that they are still partly on their trial; but the first of them, which was also the earliest to be attempted, has proved to be a failure.

OTHER INFECTIVE PULMONARY AFFECTIONS.

On Streptothrichal Infections. Under this heading John H. Musser leads us into a comparatively new field of observation, opened up, in 1887, by Rosenbach, who was followed by Naunyn, Almquist, Eppinger, Buchholtz, Sabrazès and Rivière, Ferri and Fagnet, Flexner, Scheele and Petruschky, Foulerton, and others.

The position occupied by the streptothricæ in bacteriological classifi-

¹ American Journal of Surgery and Gynecology, January, 1902.

² Centralblatt f. d. Grenzgeb., Jena, November 26, 1901.

eration is one between the moulds (hyphomycetes) and the bacteria, to both of which organisms they show some resemblance.

The pulmonary lesions in which the streptothrices have been found either alone or with other organisms show considerable variety: bronchopneumonia, extensive consolidation, abscess, bronchiectasis, empyema, and necrotic bronchitis.

An infection clinically identical with actinomycosis, but due to a different streptothrix, was described by Foulerton in 1897.

The nervous lesions are chiefly cerebral and metastatic, from the pulmonary and bronchial gland lesions.

A few other lesions are described. General "tubercle-like formations" throughout the peritoneum and abdominal organs have occurred, and in experimental pseudotuberculosis has been frequently reproduced. An abscess of the kidney was noted in one instance. Naunyn found an endocardial excrescence containing a streptothrix in his case.

Musser's illustrative cases are followed by the conclusions which we quote:

"1. The streptothrix in some varieties is pathogenic to man, and gives rise to inflammatory, suppurative, and necrotic lesions in the lungs and the skin, and by metastasis, probably in the brain and spinal cord, and, rarely, other organs (the kidneys). 2. While this pathogenicity is more than likely, and is primary, yet it must be remembered it may be a secondary growth in the course of other infections. 3. In the pulmonary cases especially death is due to a mixed infection. 4. So-called sterile abscesses may be instances of streptothrical infections. 5. Febrile processes may be due to this infection, or, conversely, this affection may be unattended by fever. 6. The morphological relations to tubercle bacilli and allied organisms must be remembered. 7. Clinical observation and laboratory studies have yet to determine the clinical course of the streptothrical infections and their relationship to other streptothricæ on the one hand, and to tuberculosis on the other. They are not unlike other streptothrical infections, if these clinical facts are true, in that in actinomycosis, for instance, we find frequently a chronic afebrile course."

Pulmonary Anthrax is sufficiently rare to deserve a special mention of the symptoms and lesions reported by B. Kreissl.¹ The clinical picture was that of cerebral hemorrhage with dyspnœa, cyanosis, pleural effusions, and bronchopneumonia. In addition to multiple hemorrhages of the brain and its membranes Kreissl found serous effusion in the pleuræ, infiltration of the intrapleural and subpleural lymph glands, bronchopneumonia in the right upper lobe, œdema of the mediastinum,

¹ Wiener klin. Wochenschrift, October 17, 1901.

bloody infiltration of the bronchial lymph glands, but no affection of the upper air passages, gastro-intestinal tract, or skin.

Pulmonary and Pleural Syphilitic Affections. The intrathoracic viscera, exclusive of the heart, present a wide field for the lesions of syphilis, but we are at present more especially concerned with those affecting the lung and its coverings. This subject is treated at some length in a notable paper on "Syphilitic Affections of the Bronchi, Lungs, and Pleura," by Norman B. Gwyn.¹ Even the coarser changes which belong to an advanced period of the disease are often difficult to diagnose. Slighter lesions analogous to those observed at the surface of the skin may be inferred to exist, and may perhaps, in some instances, have a share in the production of "syphilitic fever." Thus a syphilitic bronchitis or catarrh, or a syphilitic pleurisy, may be of more frequent occurrence than is generally supposed, but their specific nature must remain exceedingly difficult to prove. The gummatous affections of the bronchial mucous membrane and of the pleura belong to a later stage, and their occurrence is undoubted.

Syphilitic ulceration of the bronchi or of the trachea may be capable of identification while in progress owing to a simultaneous implication of the larynx, and at a subsequent period owing to the cicatricial stenosis which is apt to follow. The lung itself is liable to two forms of syphilitic disease—the gummatous and the pneumonic. Among the latter the catarrhal variety is sometimes witnessed in the infant, and the interstitial form is common to all ages. It may be doubted whether the alleged localization of gummata to the middle and lower lobes can be regarded as exclusive, but there is no doubt that when destructive lesions develop in this situation the diagnosis of syphilis to the exclusion of phthisis is much more frequently made.

The treatment of these affections does not essentially differ from that of syphilis in other regions.

A *pulmonary sclerosis* in a young hospital patient was suspected of being of a syphilitic origin by Raymond Bernard,² on account of the presence of double interstitial keratitis. No history of any acute pulmonary disease could be obtained. The heart was drawn upward to the left. There was marked thoracic deformity, with scoliosis, adherent pleura, and retraction of the left lung. Exploratory puncture was negative. Over the entire left side there were no respiratory movements, but intense pseudocavernous breathing was heard. This is clearly a case in which the possibility of healed chronic phthisis evolving during childhood cannot be excluded.

¹ International Medical Magazine, 1901, p. 597. Journal of American Medical Association, November 2, 1901.

² Gazette Médicale de Paris, 1901, No. 18,

Malignant Disease of the Lung sometimes simulates tuberculosis. This was strikingly shown in a case under the observation of H. Batty Shaw.¹ The difference in the physical signs in this case was their predominance at the base rather than at the apex. The condition was one of sarcoma of the root of the left lung, causing stenosis of the bronchus and bloodvessels and secondary pneumonia. There had been expectoration and very offensive pus, together with great cyanosis, shortly before death.

Primary Carcinoma of the Bronchi. The rarity of this affection calls attention to Pierre Merklen and J. Girard's² paper. The disease occupied the right bronchus, close to the bifurcation. No air passed, and there had been absolute dulness. Dyspnoea followed by dyspepsia had set in six months before death. The patient was aged forty-five years; his mother had died of cancer of the breast.

THE THORAX.

Thoracic and Pulmonary Malformations. "THOREN EN BATEAU." Paul Sainton and Jean Ferrand³ report a case of this deformity, with sinking in of the upper sternum, in a woman suffering from syringomyelia of thirty years' standing. The deformity is attributed to a trophic bony change simulating osteomalacia.

A THIRD LUNG. As an anatomical freak G. Herxheimer⁴ reports a case of trifurcation of the trachea, with a third lung, possessing its own bronchus, in a three weeks' infant. The three lungs presented catarrhal pneumonia.

The Physical Examination of the Chest. **MEDIATE PALPATION.** Whitney⁵ finds a double use in the phonendoscope. Besides serving for auscultation it is an excellent conductor of vibrations. When the rubber tubes are removed from the chest-piece and the palm laid upon the latter it acts as a sounding-board in reinforcing the tactile vibrations of the chest wall. Moreover, a chest-piece can be used in each hand for quicker work and for comparison.

AUSCULTATION. THE FAULTS OF THE BINAURAL STETHOSCOPE. Auscultation is regarded by H. W. Syers⁶ as a decaying art, and this

¹ British Medical Journal, June 1, 1901.

² Presse Médicale, June 29, 1902, No. 52.

³ Bull. et Mem. Soc. Méd. des Hôp. de Paris, 1901, No. 10. Philadelphia Medical Journal, August 17, 1901.

⁴ Centralblatt f. innere Med., Leipsic, July 1, 1901. Journal of American Medical Association, September 21, 1901.

⁵ Medical Record, June 20, 1901. Journal of American Medical Association, August 3, 1901.

⁶ Lancet, February 8, 1902.

he attributes to the now almost exclusive use of the binaural stethoscope. He expatiates at considerable length upon its faults, which include not only a lack of discrimination between the sounds, but also the danger of injury to the ears of the physician when it is constantly in use. He thinks that the cause of the indifferent diagnoses of chest diseases so often observed at the present time is connected with these imperfections, and that the binaural stethoscope should be done away with.

This manifesto has called forth various opinions on the other side.¹ It is undoubtedly true that unless india-rubber caps be used the pressure of the binaural is a danger. It is also true that the air conduction, which is the only conduction special to the binaural, is not so trustworthy as the double conduction by air and by solid vibrations, which belong to the perforated rigid stethoscope, and that in regard to certain delicate sounds, such as the soft, breath-like murmur of aortic regurgitation, there is danger of their not being noticed. Regulation of pressure at both extremities of the stethoscope is also vital to the efficient use of the instrument. The writer considers that the use of the binaural should not be barred because of these imperfections, but that its undoubted advantages in other respects should be made available without serious risk by carefully teaching students how to be on their guard when using it, and also in making it obligatory with them to first learn to auscultate by immediate auscultation and with the help of the rigid stethoscope.

THE USES OF THE BINAURAL STETHOSCOPE. In the discussion which followed the publication of Syers' paper, Edgar G. Trevithick² referred to an advantage which doubtless has been familiar to other auscultators, as it has been for some time to the writer of this report, but which has not received much notice, if any, in the literature: If, while percussing the chest, the stethoscope be left hanging in the ears, with the chest-piece dangling close over the part struck, the notes produced are considerably and in many cases very helpfully amplified. The true path of the sound is not readily recognized by the ears, and it is only when one stops up the stethoscope end that one is forced to the right conclusion. In some instances this method may be used with decided advantage, and its usefulness is not least in abdominal percussion.

SIMULTANEOUS AUSCULTATION OF BOTH LUNGS was practised long ago by Alison, whose "differential stethoscope" is well known. Bourget³ has recently advocated the same method of examination.

¹ *Lancet*, March 1, 1902.

² *Lancet*, March 8, 1902.

³ *Semaine Médicale*, November 6, 1901.

The instrument which he uses is practically the same as Alison's, and consists of two parallel tubes, each fitted with an ear- and a chest-piece. The object is to perceive any slight differences between the respiratory sounds in the two lungs. When both are perfect no difference of note is obtained, but even slight differences are rendered very manifest to an observer gifted with perfect hearing. Attention must, of course, be drawn to the fact that bilateral equality of auditory perception as well as of instrumental conduction is a *sine qua non* in a matter of this kind.

THE BIRESONATING STETHOSCOPE of J. Coubro Potter¹ professes to intensify the sound and make it seem nearer the ear by contriving resonating chambers close up to the ear-pieces. Some of the minutest sounds are stated to be easily heard, and there is no buzzing.

THE RIGID STETHOSCOPE. Ebstein² describes a modification of the rigid stethoscope. He prefers the hollow to the solid instrument, although Laennec favored the latter for auscultation of the heart sounds; but he believes that it can be improved by adding to it an ear-piece adaptable to either end of the stethoscope, and thus affording the choice of a small and of a larger chest-piece. This movable ear-piece is made to fit the external ear accurately, particularly the tragus.

THE AUSCULTATORY FRICTION METHOD is modified by E. Reichmann³ by applying the friction through the intermediary of a vertical piece of wood in which is cut a deep thread in a series of rings. As the finger is passed across the thread sound vibrations are set up in the chest, which are variously modified by their conduction through organs.

HOW SHOULD A PATIENT BREATHE DURING AUSCULTATORY EXAMINATION? This is an elementary point in the teaching of physical signs, and yet it is not above the notice of the busy practitioner. Rosenbach urges that auscultation should not be limited to one style of breathing. In heart examinations we are careful to listen while the patient is at rest and when the heart is made to hurry. There is much point in this contention. The difficulty is, with a certain class of patients, to obtain the various modes of respiration. For this purpose experts are familiar with certain devices which may often prove successful. But with all patients it is possible to obtain a variation in the rate of respiration, and this in itself is a practical gain. Rosenbach also refers to the importance of eliminating in this way the misleading sounds which arise within the muscles of the chest in nervous and spasmodic subjects.

PERCUSSION. The results of thoracic percussion are often vitiated by the unsuspected influence of muscular contraction, which prevents

¹ Lancet, September 28, 1901.

² Deutsche Archiv f. klin. Med., Band lxi., Heft 5 and 6.

³ Deutsche med. Wochenschrift, November 14, 1901.

the underlying resonance from being manifested under the stroke. An experienced manipulation to avoid this error is therefore essential.

The new method of percussion described by John G. Clark¹ in connection with abdominal examination has from time to time been practised by physicians, but perhaps never previously described. It consists in percussion being applied by an assistant while both hands of the observer are engaged in bimanual examination. It is therefore called by Clark the trimanual method. Its employment in examination of the chest is not likely to be often called for, nevertheless conditions may arise in which it may be found useful and convenient. For instance, a modification of this method is described by Stenitzer for the detection of fluctuation in the intercostal spaces in pleural effusions.

DISEASES OF THE PLEURA.

The Diagnosis of Pleurisy and Empyema. CYTOSCOPY is the most important innovation to be recorded in connection with the clinical study of pleurisy. The method consists in the morphological examination of the fluid obtained by paracentesis, and it has already become apparent that this mode of examination is a diagnostic method of almost equal importance with that of the bacteriological investigation of the sputum.

The diagnosis depends in cases of cardiac lesion on the composition of the effusion, in Bright's disease on the endothelial desquamation, in pneumococcus pleurisy on the leucocytosis, and in tubercular serofibrinous pleurisy on the lymphocytosis.

By means of cytology, pleurisy occurring in heart disease may be more readily distinguished from mere hydrothorax. Not infrequently pleurisy is set up by subjacent infarcts when infectious.² Polynucleated and epithelial cells predominate, as in pneumococcus.

The Cytoscopic Diagnosis and the Treatment of Tubercular Pleurisy. The fact that most acute pleurisies recover completely is not held by Dieulafoy³ as any evidence against their tuberculous nature. He regards acute serofibrinous cold pleurisy, even when apparently idiopathic, as due to tuberculous infection. Dieulafoy insists that the fluid in acute pleurisy is undoubtedly tuberculous if it contain numerous lymphocytes with red corpuseles and no patches of endothelium. The amount of accumulated fluid should be estimated from day to day and

¹ University of Pennsylvania Medical Bulletin, May, 1901.

² Semaine Médicale, January 22, 1902.

³ Ibid., November 20, 1901. Journal of American Medical Association, August 3, 1901.

evacuated whenever necessary. After recovery the patient should be regarded as predisposed to tuberculosis, and appropriate hygienic methods should be kept up for years if necessary. Dieulafoy orders before meals a mixture of equal parts of fluid extract of kola, coca, and cinchona in a glass of wine. He also injects sodium cacodylate in 5 cg. doses daily for fifteen days each month for several months.¹

The study of cyto-diagnosis of pleural effusions, originated by Widal, Dieulafoy, and others in France, has been taken up in Germany by P. Wolff,² whose attention is devoted respectively to the technique, to a study of changes of degeneration shown by the cells, and to the morphology of pleural effusions: 1. As regards the degenerative changes he denies the accuracy of the statement that the remains of the cellular elements after undergoing fatty degeneration are absorbed. 2. The fat in leucocytes is scanty in amount, unlike in nature all other known fats, and presents peculiar color reactions. 3. Fat in pleural effusions may arise from this degenerative process. 4. There appears to be an antagonism between fat and glycogenic transformation, for glycogen-holding cells are not uncommon among those which are still fresh and but slightly altered. 5. The nature and the degree of the degeneration is of no practical clinical value.

Passing to the morphology, Wolff concludes that: 1. Its details may assist etiological diagnosis, especially as to tubercle and acute infectious diseases. 2. An increase of the normal lymphocyte quotient in an exudation ($\frac{1}{2} +$) points to tubercle. 3. Tuberculous exudations at first present more polynuclear cells, often contain micro-organisms of a peculiar kind (as do other types of exudations), but as yet have not been cultivated. Slowly the character of the contained cells alters; the lymphocytes becoming predominant. Tapping and withdrawal of some of the fluid for examination every eight days suffices to prove this. 4. It is easier to speak of lymphocytes than to be sure of their accurate identification; degenerated polynuclear cells and pseudolymphocytes are readily mistaken for them. 5. So are also fatty epithelial cells (Ehrlich's large mononuclear). 6. Acute tuberculous exudations contain polynuclear and epithelial cells.

FLUCTUATION IN PLEURITIC EFFUSION as a clinical method of examination is not usually resorted to, although, according to most authorities, excepting Lebert and Fräntzel, it can be elicited from large effusions, and according to Wintrich, even from smaller ones. Stenitzer³ believed that this sign may be of use in some doubtful cases, and

¹ Journal of American Medical Association, December 28, 1901.

² Berliner klin. Wochenschrift, 1901, Nos. 5, 34, and 45; 1902, No. 6.

³ Wiener klin. Med., 1901, No. 47. Edinburgh Medical Journal, April, 1902.

he describes the method which he regards as the best. It is carried out with the help of an assistant, who, standing on the left side of the patient (in cases of right-sided pleurisy) while the latter is sitting up, places the flat of the hand with the fingers fitting the intercostal spaces over the lower part of the thorax. The observer, standing on the right side, places his right hand in the same way over the side of the thorax and presses lightly, over the interspace selected, with one of the fingers of his left hand. This method has the advantage of being easily carried out in children.

PULSATING SEROUS PLEURISY has, according to J. Kullmann,¹ only been twice described, though pulsating empyema is well known in the literature. His patient was aged forty years, had been ill three months, and two weeks before admission his chest had been relieved of 1600 c.cm. The heart was pushed to the right of the sternum, and below the left costal border a pulsating mass was to be felt, which Kullmann identified with a collection of fluid depressing the diaphragm.

PULSATING EMPYEMA. In H. Desplat's² patient, a girl, aged fourteen years, pulsation *en masse* was observed on the left side in pyothorax of apparently pneumonic origin. The diagnosis appears to have been easy in this case. Reference has elsewhere been made in connection with dilatation of the left auricle to the diagnosis of pulsating empyema on the right side and to aspiration for its relief in a case where the pulsation was really due to the auricle itself.

INFANTILE PLEURISY WITH EFFUSION AND EMPYEMA are apt to simulate the symptoms of pneumonia. W. T. English³ devotes an article to their diagnosis and treatment. He dwells upon the necessity of after-treatment by pulmonary and thoracic exercises, which have been repeatedly insisted upon in PROGRESSIVE MEDICINE.

APPENDICITIS PLEURISY is of two kinds, as described by L. Lapeyre.⁴ The *pyemic variety* may occur on the right or on the left side. The *pleurisy by propagation* is always right-sided, usually purulent, though sometimes serous, and it may even be fibrinous, without effusion. This is the last stage in the path of propagation by way of the peritoneum, and of the right retrocolic sinus. The previous stage is that of suprahepatic or infrahepatic abscess. The termination is generally fatal, death occurring between the fifteenth and the thirtieth day. The only safe treatment is to remove the appendix before the complication has arisen.

¹ Deutsche med. Wochenschrift, May 23, 1901. Philadelphia Medical Journal, September 14, 1901.

² Journal de Science Méd. de Lille, May 25, 1901.

³ Medical News, November 16, 1901.

⁴ Revue de Chir., Paris, May, 1901. Journal of American Medical Association June 8, 1901.

SUBPHRENIC ABSCESS. In Julius Weber's¹ additional series of ten cases five were due to appendicitis. Two of the abscesses were retroperitoneal and four intraperitoneal. He points out that there are four methods of propagation: along the ascending colon, along the appendix, as a secondary abscess in general peritonitis, or extraperitoneally from the retrocæcal tissue.

THE DIAGNOSIS OF DIAPHRAGMATIC HERNIA cannot be regarded as a clinical superfluity, so much depending upon it in the event of strangulation. For much information on this point the reader is referred to the original paper in the *Journal of the American Medical Association*, June 22, 1901, by Fletcher Ingals, who also discusses the anxious question as to surgical interference.

C. A. Parker² also deals with the same subject in its various aspects, and describes five cases. He regards the condition as fairly common, yet only 2 per cent. of the cases are diagnosed.

Struppler³ enters closely into the diagnosis by physical signs in his case of traumatic hernia of the diaphragm of six years' standing, with gastric symptoms beginning with persistent vomiting immediately after the injury. The physical signs noted by Struppler were a dull tympanitic note in the lower portion of the left thorax, dislocation of the heart to the right, and the physical signs of a cavity partially filled with fluid and extending from the third rib downward on the left side. The abdominal examination was negative. In order to differentiate diaphragmatic hernia from a subdiaphragmatic pneumothorax the stomach was inflated by Seidlitz powder, the left side of the thorax became inflated even as far up as the third intercostal space, and the patient had dyspnoea and a feeling of extreme anxiety. The gurgling and splashing disappeared almost completely after twelve hours' fasting. Subsequently water was injected into the colon, with a return of gurgling and splashing within the thorax. An examination with Röntgen rays proved useless.

The Treatment of Pleurisy and Empyema. LEVASCHOFF'S TREATMENT OF PLEURISY by irrigation with normal salt solution, brought before the International Congress eleven years ago, has received little attention. Tanfileiff⁴ has given it a successful trial. The normal salt solution, heated to 35° C., is injected under strict asepsis to replace; though not entirely, the fluid withdrawn at the same time, the object

¹ Deutsche Zeitschrift f. Chir., June, 1901. Philadelphia Medical Journal, November 9, 1901.

² Journal of American Medical Association, June 22, 1901.

³ Deutsche Archiv f. klin. Med., vol. lxx., Heft 1 and 2.

⁴ Vratich, December 15, 1901, vol. xxii., No. 50. Philadelphia Medical Journal February 22, 1902.

being to dilute rather than fully replace the effusion. In ten soldiers treated previously with sodium salicylate ineffectually the irrigations brought about rapid improvement and finally recovery. They are, as a rule, followed by marked pyrexia. Nevertheless, the method is represented as simple and harmless and applicable to all cases of serous pleurisy, and in the slighter cases of seropurulent pleurisy such as are apt to follow pneumonia. Tuberculous pleurisy not due to primary tuberculosis of the pleura may also be treated in the same way.

AIR LAVAGE OF THE PLEURAL CAVITY AFTER PARACENTESIS. Kawahara¹ reports thirty-nine cases out of an aggregate of seventy since 1891, with a death-rate of 5 per cent. He finds that it is unnecessary to filter the air, which is allowed to enter through the same canula as soon as the fluid has been aspirated, for pyogenic microbes do not develop. The method is also peculiarly adapted for cases in which paracentesis has to be interrupted for any cause, or when the evacuation of the effusion is hindered by pleuritic adhesions or by impaired elasticity of the lung.

THE TREATMENT OF HEMORRHAGIC PLEURISY BY GELATINIZED SERUM. Raymond Bernard² relates four cases of hemorrhagic pleurisy in which, after evacuation of the fluid, the subcutaneous injection of gelatinized serum apparently prevented further effusion. The patients were otherwise healthy young soldiers. Bernard does not claim for the serum that it has any influence upon tuberculosis, which is generally the cause of the effusion.

THE RESORPTIVE POWERS OF THE PLEURA. Grober's³ experiments in a subject which is largely theoretical possess, nevertheless, a practical bearing upon questions of treatment. They lead him to attach least importance to aspiration on the part of the thoracic duct and to the *vis a tergo* of the circulation, but to attach more importance to osmosis and capillary attraction, as the differences between the concentration of the exudation and of the serum of the blood must tell through the walls of the vessels in the pleura; and it has been found by Castaigne that during the first week of pleurisy the pleural fluid is more concentrated than the serum, and that presumably the exudation would recur if aspiration were performed then. By far the greatest importance, however, is attributed by Castaigne to the movements of respiration which influence the lymphatic flow and exert a pumping action upon the stomata. Physicians will thoroughly endorse these views as to the importance of systematic respiratory activity in order to overcome the

¹ Virchow's Archiv, Berlin, 1901, vol. clxiv., p. 3.

² Lyon Médicale, October 13, 1901.

³ Ziegler's Beiträge, 1901, vol. xxx., pp. 267-347. Journal of American Medical Association, September 28, 1901.

post-pleuritic laziness of breathing, to which attention has been called in *PROGRESSIVE MEDICINE* (Vol. III., pp. 49-51, 1900). But the writer of this report also believes in the importance of a diuretic and diaphoretic treatment, together with a stimulation of the heart by digitalis and strychnine, to increase as much as possible the activity of the peripheral circulation and of the osmotic process.

THE TREATMENT OF EMPYEMA. J. H. Dunn's recommendations are practically important. Adequate drainage being the first requisite, he recommends resection of 6 cm. of the eighth rib outside the angle of the scapula. The physician should make a bacteriological examination before deciding to operate. As in cases of pure pneumococcus infection, repeated aspiration may be given a trial. He believes that wiping the cavity with gauze is to be preferred to irrigation, and he advises the use of drainage gauze because the opening readily contracts around a rubber tube. The after-treatment by respiratory gymnastics should receive the physician's attention. When the cavity persistently refuses to contract, the difficulty, he thinks, is rather a thickened and rigid pleura than the ribs themselves, and he recommends Schede's operation.

Hartwell's instructive paper in the *Medical News* of July 13, 1901, is largely devoted to practical questions of surgery, but the following are points of general interest:

1. Children are especially liable to empyema following pneumonia. Unless promptly relieved by drainage of the pleura the prognosis is bad. With such relief the prognosis is good.

2. Pneumonia causes empyema in 50 per cent. of the cases, and such cases are of severe type.

3. Tuberculous family history exerts little influence on empyema.

4. In about one-sixth of the cases the empyema is sacculated.

5. The pneumococcus is found in 50 per cent. of the cases where examination is made, the streptococcus in $33\frac{1}{3}$ per cent., the staphylococcus in 8 per cent., the tubercle bacillus in 4 per cent., and no bacterium in 16 per cent.. The pneumococcus produced the most virulent infection in his series. The mortality from the empyema proper was 15 per cent. We may hope to reduce it to one-half that number by earlier and more radical treatment.

Obsolete empyema should, according to Faisans,¹ not be interfered with unless unavoidable. In his patient, a man, aged fifty-five years, who died of cirrhosis of the liver, the pus (nearly 3.5 litres, enclosed in an indurated pleura in cartilaginous or bony places) had probably been contained in the pleura for forty years without prejudice to an active career of work and military service.

¹ Bull. de la Soc. des Hôp., Paris, June 20, 1901.

Empyema was treated by Levaschoff's method by A. A. Kissel,¹ in a boy, aged two years, much emaciated from tuberculous disease of the knee. Four aspirations of the pleura were made, and after each of them the same amount of salt solution was injected. At the last application there was only slight turbidity of the aspirated fluid, which at first was thin pus. Two other aspirations were made at longer intervals, and the case is described as having been cured.

THE OCCASIONAL ACCIDENTS CONNECTED WITH PARACENTESIS are illustrated by J. C. Lange's² three remarkable cases. The first case was that of a patient with cardiac dilatation, arterio-sclerosis and aortic murmur, and large bilateral thorax. The aspirating needle was introduced into the left seventh intercostal space laterally. The moment it entered the chest the patient died of heart paralysis. The necropsy revealed an overcharged right side and the presence of hydropericardium. In the two other cases hæmoptysis occurred at the time of the operation. In the first case blood gushed from the trachea, and the patient became cyanosed, but recovered under treatment by morphine and rest. The needle had apparently punctured a bronchus, as the first result of aspiration was a mucilaginous, thick substance, which travelled with difficulty along the tube.

HEMORRHAGE FROM THE LINING OF A PYOTHORAX immediately followed washing out with Thiersch's solution after opening the pleural cavity, with excision of the ribs, in a case reported by A. Jacobi.³ The hemorrhage, which was stopped by packing, seemed to arise from tufts of vessels on the pulmonary pleura. Cases of slight hemorrhage are not uncommon in empyema, but Jacobi has not met with any reported case analogous to his own.

PROFUSE EXPECTORATION OF ALBUMINOUS FLUID sometimes follows thoracocentesis. We are indebted to David Riesman⁴ for a full review and bibliography of the literature of this remarkable and sometimes fatal complication, which may be regarded as due to a recoil congestion set up by the withdrawal of a large quantity of fluid. He lays due stress upon the predisposing influence of heart disease and of any conditions hindering the expansion of the opposite lung, and upon the desirability in all such cases of aspiration by instalments, or, at any rate, of the very gradual withdrawal of fluid. The cough is apt to be intense, and will then be best treated by morphine. Counter-irritation, venesection,

¹ Arch. f. Kinderheilk., Stuttgart, vol. xxxii. p. 122. Journal of American Medical Association, September 21, 1901.

² Philadelphia Medical Journal, October 5, 1901.

³ Sixteenth Annual Meeting of American Physicians. Journal of American Medical Association, May 18, 1901.

⁴ American Journal of the Medical Sciences, April, 1902.

and artificial respiration are the other indications. The rarity of this complication and of fatal syncope is apt to breed overconfidence in practice, yet we should never lose sight of these possibilities in the every-day routine of the treatment of pleurisy. I have often thought various advantages would be secured by allowing a moderate amount of aseptic air or some readily absorbed gas to enter the pleura while fluid was escaping, thus steadying the circulation within the lung and also supporting the lymphatic vessels of the pleura. Gradual expansion of the lung would follow in due course.

Primary Echinococcus of the Pleura Cured by Sublimate Injections. In the case described by J. Bokai,¹ in a boy, aged five years, Bacelli's method of treatment was adopted, and after withdrawal of the fluid by puncture 20 c.c. of 1 in 1000 in solution of sublimate were injected. Pyrexia followed for five days, with a temperature of 39.2° C., but the patient improved, and after a second injection a month later he left the hospital, cured.

Pneumothorax. PNEUMOTHORAX FROM PARACENTESIS THORACIS. Much practical interest attaches to Variot and Pierre Roy's² experience, related before the Société Médicale des Hôpitaux, on October 11, 1901, as to an unusual complication of the simple operation of tapping. It was observed that a little air was mixed with fluid from the first. After insertion of the needle it was observed that gas bubbles were mixed with the aspirating fluid, 120 grammes of which were slowly discharged until cough set in. After its withdrawal the cough continued, and asphyxial symptoms set in, with acute pain in the right side and a large quantity (250 grammes) of frothy, bloody fluid was coughed up, and next day about 190 grammes. The symptoms gradually subsided. Auscultation applied at this time gave amphoric breathing over the previous seat of dulness from effusion. The amphoric breathing ceased to be heard after July 10th. The question arises as to the mode of production of this pneumothorax. The authors argue that it was not due to traumatism, but to the strain of the aspiration upon an adhesion of the lung, and that the serosanguineous expectoration was due to the passage of some of the pleural fluid through a pleuro-pulmonary fistula. Another view of the case, however, is that the lung was hit, however slightly, and a vessel wounded in the midst of collapsed tissue, which facilitated, perhaps, the passage of some pleural fluid to mix with blood into the bronchial system. Conceivably, however, the expectorated fluid was itself a product of the pulmonary circulation.

¹ Orvosi Hetilap, 1900, vol. xvii. Journal of American Medical Association, June 1, 1901.

² Lancet, November 16, 1901.

Nevertheless, their contention, which is reasonable, appears to me to suggest a further argument in favor of the method which proposes to deal with all effusions in the chest cavity by replacing the fluid withdrawn by so much aspirated air. The arguments in favor of such a proceeding need not be insisted upon in this place, but it would certainly have the effect of obviating any dangerous strain being thrown upon pulmonary surfaces which possibly might give way under negative pressure.

THE INTRAPLEURAL PRESSURE OF PNEUMOTHORAX. L. Bard's¹ experimental studies should be consulted by those interested in the theoretical aspects of intrapleural pressure. We need only extract from his conclusions the following, which have some bearing upon practice. The measurement of the pressure of gas within the pleura aids diagnosis as to the existence, the permanence, or the obliteration of a pulmonary fistula; but information is to be gained rather from the extreme pressure than from the mean pressure. The pressure is positive during both stages of respiration in generalized pneumothorax with persistent fistula; it is positive during expiration and negative during inspiration in partial pneumothorax with open fistula; it is negative during both stages of respiration in generalized pneumothorax when there is no fistula or after the obliteration of a fistula. He regards the positive pressure in pneumothorax as a compensatory change adapted to obliterate the fistula, and he thinks that it should not be interfered with when it has set in, and that the stage of initial suffocation may be relieved by hastening its occurrence.

TUBERCULAR PNEUMOTHORAX should not be regarded as a hopeless condition. Spengler,² of Davos, has had four cases of cure, and a fifth so far cured that a serous exudate only remains. Concurrently the pulmonary lesion was healed. He thinks that the most favorable adjuvant is the formation of an abundant exudate gradually replacing the air in the pleural cavity and bringing with it also a healing deposit of fibrin. The effusion of fluid has not hitherto been promoted by the use of intrapleural injections, but it seems to be favored by leaving the bed. At the end of three weeks the pleural perforation is probably healed, and only a portion of the fluid (500 to 700 c.c.) should be removed by puncture. In another week or two another litre may be withdrawn, and two to four weeks later one or two litres. This will probably suffice.

One of his cases recovered without puncture, but in the others it had to be frequently repeated.

¹ *Revue de Médecine*, July, 1901.

² *Zeitschrift f. Tuberculose*, Leipzig, vol. ii. p. 2.

Chylothorax. Reference may be made under this heading to a traumatic case reported by B. K. Finkelstein¹ and to a medical case by F. Barjon.² As in the peritoneum, where these kinds of effusion are more commonly seen, the fluid may be chylous or merely chyloform. As shown by Lyon, in 1893, the effusion may be milky in appearance and yet not true chyle, containing no visible fat globules or granules, and not being cleared up by ether. In Finkelstein's case two litres of truly chylous fluid were evacuated on two occasions. The patient had received two wounds in the chest—one at the episternal notch and the other near the fourth rib. The bibliography appended to the case includes twenty-two recorded instances of injury to the thoracic duct. In Barjon's case also the fluid was apparently chylous, and the causation of the effusion was identified as tubercular by the inoculation experiments with the fluid in animals. He regards these effusions as due to chronic bacillary infection of the pleura. He states that among forty-nine cases of milky effusion in the thorax recently recorded only thirteen were chyloform.

BRONCHIAL AFFECTIONS AND THEIR TREATMENT.

Asthma and Spasmodic Dyspnœa. THE ETIOLOGY OF ASTHMA. The number of theories which have been advanced in reflex neurosis, contraction of bronchial tubes, nervous spasm, blood disease, irritation of air-tubes, irritating tumors, extension of bronchitis, vasomotor bronchitis, diathetic neurosis, neuroses of the pulmonary plexus, uric acid diathesis, oxalic acid dyscrasia, excess of venous blood in the medulla, as a symptom of emphysema and bronchitis, etc., is consistent only with a view that the etiology is variable and always complex. John North³ thinks that three factors form the "asthmatic tripod:" 1. A vulnerable area of mucous membrane. 2. An abnormally sensitive nerve centre. 3. An external irritant or exciting cause. They are all required for the production of asthma. Remove one of them and the attack will not return.

The various names given to the different varieties of asthma are derived from the locality of the vulnerable area of mucous membrane.

This view of the pathology of asthma may be accepted as an excellent working hypothesis for our therapeutics. Our remedies will address themselves to the nervous delicacy of the patient, to the more

¹ Bolnitchnaia Gaz., Botkina, May 30, 1901. Philadelphia Medical Journal, August 3, 1901.

² Bull. Méd., Paris, July 10, 1901.

³ Meeting of Missouri Valley Medical Association, September 12 to 14, 1901. Journal of American Medical Association, September 28, 1901.

or less localized exciting cause, and to the resulting symptoms; and our treatment will be in turn constitutional, causal, and symptomatic.

ASTHMA AS AN URTICARIAL AFFECTION. Asthma is sometimes diagnosed, as pointed out by Lewis S. Somers, in cases where urticaria, instead of developing at once upon the skin, first attacks the mucous membrane. The case is cleared up when the cutaneous eruption appears and when a previous history of similar attacks is obtained.

PATHOLOGY OF ASTHMA. G. N. Jack¹ regards it as only a symptom of very complex and varying biochemical changes, bred of confirmed dyspepsia, with faulty absorption and of toxic perversion of the chyle, and therefore of the blood, the blood itself undergoing paroxysmal morphological changes. This instability in the composition and in the chemistry of the blood determines oscillations between asthmatic lymphocytosis and anæmia.

THE DYSPEPTIC ASTHMA OF HENOCH,² first described by him and later by Silbermann,³ in children, as an acute and alarming attack of dyspnœa and cyanosis, and in adults as a more chronic condition, by E. Barié,⁴ by Lauterbach, Oppler, Boas, Ehrlich, Murdoch, and others, has been explained on the lines suggested by Traube's theory of the dyspeptic origin of asthma:

"The gastric irritation causes reflexly a vasomotor contraction of the small arteries, which explains the cold extremities, the imperceptible pulse, the congestion in the venous system and in the right heart, cyanosis, accumulation of carbon dioxide in the blood, and as a consequence thereof the frequent dyspnœic respiration."

Barié's description will best identify the condition:

"The respiratory difficulty appears immediately after meals, the quantity of food having no influence upon its appearance. With pre-disposed individuals the smallest morsel suffices to evoke an attack. Chomel, who observed the dyspnœa of certain dyspeptics, says: 'The patients, after having taken merely a few spoonfuls of soup, experience a respiratory embarrassment of a more or less severe nature lasting throughout the whole time of digestion.' We have here, then, a very special kind of dyspnœa, independent of any distention of the stomach by gas during digestion, differing also from the transient and purely mechanical kind of oppression observed in large eaters after a copious meal. It is not in the respiratory tract that the obstacle is to be looked for, but in the pulmonary circulation. However that may be, the air

¹ Buffalo Medical Journal, June, 1901. Journal of American Medical Association, July 6, 1901.

² Berliner klin. Wochenschrift, 1876, No. 18, p. 241.

³ Ibid., 1882, No. 23, p. 348.

⁴ Revue de Méd., 1883, iii.

hunger, not being appeased, soon produces inexpressible anguish, with imminent asphyxia."

Max Einhorn,¹ from whose paper these remarks are taken, has had considerable experience. He divides his thirty-one cases into the group of periodical attacks—which are apt to be very severe, even to the extent of collapse, and to occur in an unexplainable manner or after excitement or fatigue—and into the group of chronic cases, in which the suffering may arise immediately or soon after meals, or else two or three hours later.

The differentiation between dyspeptic asthma belonging to the first category and true angina pectoris is not always easy. As a rule, however, cases of dyspeptic asthma are amenable to treatment; that means that a rational regimen with regard to the digestive apparatus is followed by good results. These cases also are often capable of a permanent cure. Cases of angina pectoris, however, caused by cardiac lesions—if the latter are not manifest—are much less amenable to treatment, and if improved the amelioration is only transient.

Cases in the second category are easier to identify with a gastric causation. Henoeh's tabulated list shows among them a large proportion of cases of hyperchlorhydria, some cases of achylia gastrica, and several cases of hepatoptosis, of enteroptosis, and of gastric atony. In cases of hepatoptosis he attributes importance to the dragging which occurs at the diaphragm. He speaks hopefully of the prognosis of cases if well managed.

THE DYSPNŒA OF OBESITY, particularly in the anæmic varieties, is, according to J. M. Anders,² largely due to mechanical interference with the pulmonary function, though in the plethoric form it is often remarkably slight; but the obese are liable to dyspnœa incidental to chronic bronchitis and to asthma, and for its successful treatment it is essential that the gouty or lithæmic state which often underlies it should be recognized. He believes that asthma occurs in about 5 per cent. of cases of obesity; that it only occurs in extreme polysarcia; that there is a gouty state or history in most cases in which true asthma is secondary to obesity; and that about 50 per cent. of the cases are curable by appropriate treatment directed to the cause.

THE TREATMENT OF ASTHMA. The constitutional treatment must have for its object relief of the nervous irritability by strengthening the nervous system and raising its resistance.

Asthma, spasmodic and bronchial, is rightly included by Simon Baruch³ among the various nervous and neurasthenic disorders which

¹ Journal of American Medical Association, February 1, 1902.

² Ibid., October 12, 1901.

³ Brooklyn Medical Journal, July, 1901.

receive decided benefit from hydrotherapy. Hydrotherapy, however, is but one branch of the much wider treatment by hygiene.

The symptomatic treatment is that which too often alone receives attention, and too often proves to be futile, and in the long run damaging. It needs to be considered, but it should never be divorced from the more essential elements which make for a cure. The following prescription recommended by Eshner¹ illustrates the combination of these two objects :

R.—Hyoscine hydrobromatis	g. ̄ ̄ ̄	01
Strychnie sulphatis	gr. ̄	05
Morphine sulphatis	gr. vj.	36
Sodii bromidi	ʒ vj.	24
Liq. potassii arsenitis	f ʒ ij.	8
Tinct. digitalis	f ʒ iv.	16
Infusi gentiane comp.	q. s. ad f ʒ vj.	192

M. Sig.—Two teaspoonfuls every three hours in water.

The causal treatment is by far the most important. The cause may be easy to remedy, but it may be exceedingly difficult to identify. Until it is found and adequately treated the patient cannot be permanently relieved. Its locality varies, but it is generally connected with some part or other of the mucous tract, most often, perhaps, with the gastric mucous membrane.

Laryngismus and Œsophagismus in adult life are often mysterious in their etiology and difficult to treat. L. D. Brose,² who writes on this subject in connection with two cases, observed in practice that in the majority of instances the spasm is connected with hyperæsthesia in hysterical or neurasthenic patients, but it is important to exclude the possibility of some deep-seated cause of pressure upon the recurrent laryngeal nerve.

An associated air deglutition spasm is described by Meredith Young³ in his own case, during an attack of whooping-cough.

Hay Fever and Its Treatment. J. Robertson⁴ distinguishes in the etiology a constitutional idiosyncrasy and an exciting cause. The successful treatment is that by which either of these is overcome. To remove the exciting cause the usual spray is ineffectual. A nebulizer is needed to reach the out of way places, the finer passages, the sinuses, the antrum, and other recesses, but a preliminary spraying of the throat and nose is of use, and various formulæ are appended for the nebulizer or comminuter. But the constitution must also be treated.

¹ International Clinics, 1901, vol. ii.

² Journal of American Medical Association, June 22, 1901.

³ Lancet, December 14, 1901.

⁴ Medical Council, Journal of American Medical Association, July 27, 1901.

The patients are usually neurotic, anæmic, and ill-nourished. The gastro-intestinal tract and the emunctories need special attention.

E. B. Gleason¹ bears in mind the excess of uric acid in the blood, and recommends its elimination by mineral acids. Hydrobromic acid is indicated as being a sedative, but he specially recommends nitro-muriatic acid; 3 to 5 minims freshly prepared in half a glass of water, after meals and at bedtime, will yield good results in forty-eight hours.

Dobbs has obtained apparent immunity by painting the inside of the nostril and causing to be snuffed up a thin ointment of liq. carbonis detergens in benzoated lard.

Temporary relief may be obtained by reducing the congestive swelling of the mucous membrane. For this a 1 to 5000 solution of adrenalin in normal salt solution is the best preparation. Chloretone may be used in conjunction with it.

TRICHLORACETIC ACID IN HAY FEVER. H. Krause,² speaking from a favorable experience of two years and of upward of 30 cases, recommends the use of trichloroacetic acid in 1 per cent. solution, to be snuffed up the nose, as a cure for hay fever. Improvement and cure are stated to follow in from two to eight days.

INSUFFLATION OF THE ANTRUM OF HIGHMORE WITH ARISTOL POWDER has been resorted to with success by E. Fink.³ Several cases were cured completely after both antra were treated.

THE CURE BY IMMUNIZATION has been further developed by H. Holbrook Curtis,⁴ in spite of the circumstance that Heymann and Matzuschita⁵ have thrown considerable doubt upon the "pollen" theory, and demonstrated the presence in the nasal secretion of a large excess of streptococci. Curtis has injected a sterilized infusion of roses under the skin with success, and believes that immunization can be secured in 60 per cent. of those cases which are due to ragweed, by the administration of the aromatic extract of ragweed. The injection of pure hippuric acid under the skin has been tried by H. L. Wagner in individuals liable to asthma after riding behind a horse. One or 2 cubic centimetres of a 3.5 per cent. solution were injected every third or fourth day. It is obvious that any results claimed for these methods can only be explained as due to suggestion.

¹ International Medical Magazine, 1901. Journal of American Medical Association, 1901.

² Merck's Archives. Journal of American Medical Association, August 31, 1901.

³ Deutsche med. Wochenschrift, November 14, 1901. Epitome, British Medical Journal, December 28, 1901.

⁴ New York Medical Journal, 1901.

⁵ Zeitschrift f. Hyg. u. Infektionskr., 1901, xxxviii. 495-499.

Cough Due to Reflex Irritation in the Upper Air Passages.

Frank S. Milbury¹ endorses Thompson's dictum that "there are fourteen varieties of useless coughs." He believes that all coughs are reflex, and that a large number, if not the majority of coughs, are caused by some abnormality in the district of the throat, nose, and ear. Barnhill (*The Laryngoscope*, February, 1898) supplies us with a list of the principal reflex causes: 1. In the ear, impacted cerumen, foreign body or cholesteoma. 2. In the nose, hypertrophies, septal spurs, polypi, foreign bodies, and the crusts of atrophic rhinitis. 3. In the nasopharynx, adenoids, polypi, or other growths. 4. In the pharynx, elongated uvula, granular pharyngitis, hypertrophy and other diseases of the tonsils. And to this may be added atrophic pharyngitis and viscid mucus in pharynx. 5. In the glosso-epiglottic spaces, hypertrophied lingual tonsils, varix, or a too greatly curved epiglottis. 6. In the larynx, presence of mucus or pus, congestions and thickenings of the mucous membranes, papilloma or other growth. 7. In other parts of the body, irritation of the vagi and sympathetic are the most frequent causes.

The consensus of opinion among rhinologists seems to be that the posterior ends of the inferior turbinates and that of the septum and inner surfaces of the middle turbinated bodies and that part of the septum lying opposite, are responsible for most of the coughs from nasal causes. As stated by Mayer² "a cough is reflex in its origin: 1. When it is spasmodic, practically constant, without or with but little expectoration and temperature. 2. When the physical signs of pulmonary diseases are absent. 3. When it persistently resists all medication for permanent relief. 4. When the general health remains comparatively undisturbed. 5. When upon removal of the cause it promptly ceases.

General treatment is necessary in conjunction with the local. Digestion and alimentation, and all neurotic conditions should have the most careful consideration."

Continuous Sneezing. Masse's³ interesting case was probably of hysterical origin. A neurotic girl, aged sixteen years, had had dyspeptic symptoms, with frequent headaches and facial neuralgia. After influenza her dry cough ceased rather suddenly and was replaced by paroxysms of sneezing, recurring from her awakening seven or eight times a minute until she went asleep. There was a sense of irritation in the nose, and the paroxysms were worse after eating. All treat-

¹ Journal of American Medical Association, May 25, 1901.

² New York Eye and Ear Infirmary Reports, January, 1897.

³ Rev. Heb. de Laryngologie, d'Otologie et de Rhinologie, February 2, 1901. Journal of American Medical Association, June 8, 1901.

ment was ineffectual until Masse noticed that the spinal column was bent slightly forward. The use of a supporting apparatus was promptly followed by a cure.

The dangers incidental to continuous sneezing in pregnancy are illustrated by the case reported by K. Heil.¹ Abortion occurred in the third month as the result of the sneezing. At an early stage in the pregnancy which followed, when the sneezing reappeared, abortion was prevented by injecting the nose with cocaine.

The Treatment of Bronchitis. SPASMODIC BRONCHOSTENOSIS. The recognition of a spasmodic element often present in bronchitis is essential to a successful treatment, as the routine medication too often fails to allay the spasmodic cough. Albert Abrams² proposes to differentiate in the individual patient the purely bronchitic and spasmodic element in the narrowing of the tubes. He believes that the inhalation of a few drops of amyl nitrite will temporarily remove the râles due to spasm, but will not dispel those due to the bronchitis. In the treatment of the spasmodic cases iodide of potassium will be found as useful as it is in the bronchial spasm of asthma uncomplicated with bronchitis. He suggests the following formula as likely to afford relief :

R.—Potassii iodidi ʒv.
 Tr. lobeliæ fʒv.
 Spts. glonoini ℥xvi.
 Elix. potassii bromidi q. s. ad fʒiv.—M.

Sig.—A tablespoonful three times a day after meals. This dose may be gradually increased if necessary.

It cannot be doubted that bronchial spasm is an important and in some cases a determining factor in the course taken by the disease. Much of it is due to the direct irritation to which the membrane is subjected by the products of inflammation, and any general and local medication is welcome which can reduce the local irritability without depressing the heart. But in many cases there is also a reflex gastric cause, and in such cases if we can successfully treat the stomach the spasm itself will not call for drugs.

CACODYLIC MEDICATION has been used with success by Gallois³ in the chronic bronchitis and asthma of fifteen elderly patients. Doses of 0.1 gramme of sodium cacodylate were given three times a day in peppermint water.

ARTIFICIAL RESPIRATION has been resorted to by Hermann⁴ in severe cases of bronchitis in children. He first employed it in a six-months-old infant apparently moribund, using Schultze's method and pressure during expiration on the false ribs, for a period of two hours.

¹ Münchener med. Wochenschrift, No. 44.

² Medical Record, December 7, 1901.

³ Bull. Méd., Paris, October 16, 1901.

⁴ Therap. Monats., Berlin, August, 1901.

The advantage of the method consists in the increased depth of breathing, which facilitates the expulsion of accumulated secretions. The procedure may be repeated several times a day.

IN ASPHYXIA SUBCUTANEOUS INJECTIONS OF APOMORPHIA have been found useful by Pugh.¹ He injects $\frac{1}{10}$ th of a grain, and repeats the dose after ten minutes, to stimulate the respiration by the act of vomiting. He believes that it might be of use in drowning, in lightning stroke, and in opium poisoning.

Fibrinous Bronchitis forms the subject of an important paper by Milton Bettmann,² who contributes a case and reviews all those in the literature. In the exhaustive bibliography which is appended the cases are arranged in groups under pathological or clinical headings.

Secondary Pulmonary Affections. These sometimes originate in infection from the upper air passages. Du Magny calls attention to this by no means novel observation in the *Bull. de l'Acad. de Méd.*, Paris, July 2, 1901. He describes 8 cases which he has followed for long periods. Bronchitis recurred winter after winter, and stimulated tuberculosis before the discovery was made of a suppurative lesion higher up. In cases of this sort the relief of polypi, of adenoids, of sinusitis, or of suppurative otitis put an end to the pulmonary troubles, which are usually observed to be on the side on which the patient habitually sleeps. Du Magny endeavors to trace definite characteristics in this form of affection; but the diagnosis mainly rests with the bacteriology of the sputum.

Bronchiectasis. The clinical study of this condition by Theodore Dyke Acland, in the *Practitioner* for April, 1902, provides us with a recent view of some of the aspects of this distressing malady, and particularly of the therapeutic aspects to which the present remarks must be confined.

The following are the methods by which we may seek to carry out the chief indications, which are the evacuation of the secretion, the disinfection of the tubes, and the obliteration of the cavities:

1. Inhalations of volatilized antiseptics: (a) creosote vapor baths; (b) inhalations of creosote, oil of peppermint, eucalyptus, etc.
2. Subcutaneous and intravenous injections of antiseptic fluids.
3. Internal medication.
4. Surgical treatment (incision and drainage).

Acland's experience is in favor of Arnold Chaplin's method of the creosote vapor baths, which, unfortunately, is neither pleasant nor rapid in its operation, and does not always succeed in lessening the amount

¹ Journal of American Medical Association, October 12, 1901.

² American Journal of the Medical Sciences, February, 1902.

of the expectoration. Other substances, such as vapo-cresoline, refined creosote, soluble cresol, etc., have been tried as substitutes without proving so effective as the crude creosote. Parry,¹ however, has been successful with guaiacol vapor baths after failing with creosote. Acland has not been favorably impressed with the ordinary inhalations through respirators or inhaling bottles, and he warns against the danger of the contrivances used for inhalation becoming dirt traps laden with germs. For this reason the folded perforated zinc respirator is, perhaps, the least objectionable. *Intralaryngeal injections* introduced by Rosenberg, and subsequently by Grainger Stewart and now much advocated by Colin Campbell,² do not receive much support because they have given rise in his hands to constitutional disturbance, violent cough, and marked rise in temperature, in addition to which he regards the amount of antiseptic as insufficient for the purpose, and that the injection has to be made before the tubes are cleared. *Subcutaneous injections* of guaiacol (1 to 4) and creosote (1 to 5) in sterilized olive oil have been tried by Kingston Fowler, but they are not free from the liability to set up irritation and necrosis at the point of injection. The *intravenous injections of formalin* introduced by Robert Maguire (25 to 50 c.c. of a 1 to 2000 solution of formalin in normal saline solution) have been tried by Acland, who finds that they did not really benefit the patient, although in one case as many as forty-nine injections were made in twenty-two weeks. Lastly, the *surgical treatment* of bronchiectasis, which has now been given a very extensive trial, must be pronounced a record of failure or of very partial success, easily explained for the well-known reasons that these cavities are seldom single, usually bilateral, that the tubes ramify, that the pulmonary tissues are profoundly altered and prone to hemorrhage, and that anæsthesia is a source of danger. Moreover, inasmuch as a system of small cavities permeating the indurated lung gives physical signs apt to be mistaken for a large cavity, an attempt is sometimes made to drain a large cavity where it does not exist. The final conclusion arrived at is to the effect that "in the adult, bronchiectasis, when once fairly established, is, except in very rare instances, incurable by any method of treatment at present available. In some of the more acute cases in young persons cure may occasionally result. In chronic cases the distress of the condition can often be greatly relieved, and if the exciting cause of the disease is not progressive, life can frequently be greatly prolonged." The *postural treatment* is not discussed, and only

¹ Lancet, 1899, ii. p. 210.

² Med.-Chir. Transactions, 1895, vol. lxxviii. p. 39; also Transactions International Medical Congress, London, 1901.

incidentally mentioned, although Acland acknowledges that it must be of value.

THE POSTURAL TREATMENT OF BRONCHIAL AFFECTIONS, first described by Quinke and subsequently by Jacobson, was referred to in *PROGRESSIVE MEDICINE*, Vol. III., 1901, p. 73. It is of special value in bronchiectasis, and it was in a case of this kind that it suggested itself to the present writer,¹ at that time unaware of Quinke's previous work. Relief to the patient was striking, the persistent pyrexia stopped from that day, as well as the gushing character of the expectoration. No other treatment can be so simple, so rational, and at the same time so effective. Although it will not be found curative in advanced cases, he regards it as the indispensable preliminary and as the most helpful adjunct to all other varieties of treatment. His own method is that of continuous elevation of the foot of the bed in preference to the discontinuous method of Quinke. A moderate elevation of from 12 to 14 inches is usually well borne; and for brief periods a considerably greater elevation may be resorted to with benefit.

The Treatment of Bronchial Affections by Inhalation and by Injection. THE INHALATION OF MENTHOL is a simple and efficacious remedy for cough. M. Säger² points out that it may be easily carried out by warming a few crystals in a spoon, or by pouring 10 to 20 drops of a 50 per cent. alcoholic solution on the palms and holding the latter over the face. He has also used injections of menthol and olive oil into the throat in chronic bronchitis and phthisis, and has found them very effective in whooping-cough.

PROLONGED OXYGEN INHALATION FOR FETID BRONCHORRHEA was successfully employed by F. Vicars³ by means of Dr. G. Stoker's oxygen apparatus, which consists of a cubic foot collapsing bag with india-rubber tube and nasal attachment. The bag was filled with oxygen gas from a cylinder, and the nasal end inserted in one nostril, the other being plugged with cotton-wool.

Oxygen was inhaled continuously for several hours daily for ten days. The sputum became less and entirely free from odor. The patient also felt better, and beyond small doses of cinchonine had no other treatment.

A VAPORIZING APPARATUS for saturating the air of rooms with the moisture of vaporous fluids is described by Bulling.⁴ Compressed air

¹ The Treatment of Bronchiectasis and of Chronic Bronchial Affections by Posture and by Respiratory Exercises, by William Ewart, *Lancet*, July 13, 1901.

² *Therap. Monatshefte*, July, 1901. *Journal of American Medical Association*, September 7, 1901.

³ *British Medical Journal*, March 1, 1902.

⁴ *Münchener med. Wochenschrift*, June 25, 1901. *Philadelphia Medical Journal*, August 31, 1901.

is used to drive the vapors through minute openings of different sizes in a system of long tubes connected with a vaporizing apparatus.

INTRATRACHEAL INJECTIONS. Thompson,¹ of Cincinnati, contributes further details as to the technique of intratracheal injections, of which he has a high opinion in chronic bronchitis and asthma. The most effective medicines are those slowly volatilizing within the lung, such as menthol, 2 per cent. ; camphor, 2 per cent. ; carbonate of creosote or of guaiacol, 1 per cent. ; 2 to 4 drachms of a solution in oil or light petroleum are used.

The value of intratracheal injections receives strong testimony from W. S. Anderson.² Although the method is not applicable in the congestive stage of acute bronchitis, it is of distinct advantage in subacute and chronic bronchitis. It is of positive benefit in bronchiectasis ; it is valuable in pulmonary tuberculosis, relieving many of the symptoms, especially those due to secondary infection ; and it quickly relieves the distressing symptoms of asthma. The amount and permanency of the relief depends largely upon the predisposing and exciting causes. It in no way interferes with other lines of treatment, and the writer has never seen harm follow its use, although in a very few instances it excited severe coughing for a short time.

The deficiencies of the various inhalation systems have been investigated by Emmerich.³ His experiments were directed to determining the size of the drops and their relative number after vaporization, as well as the depth to which they penetrated into the lung. This was done with the help of Bulling's apparatus, which he finds saturates the atmosphere with vapor more rapidly than any other, to the extent of 100 per cent. in three or four minutes, while the drops remain of minute size (0.006 to 0.012 mm.). He also states that with Bulling's apparatus the fluid penetrates further than with any other ; but he is positive in stating that the alveoli are never reached, because it has been proved experimentally in the bodies of executed criminals that the alveoli contain no germs.

The finest nebulization may, however, penetrate to considerable depths and, perhaps, into the alveoli. In a letter to the editor to the *Journal of the American Medical Association*, February 22, 1902, Homer M. Thomas refers to his "Experimental Work on the Penetrability of Vaporized Medicaments into the Air Passages," and to his communications to the Chicago Pathological Society (April 12, 1897), and to the Chicago Academy of Medicine (1900). On the evidence of the microscopic slides which he exhibited he contends that it is

¹ Lancet Clinic, August 31, 1901.

² Medical News, September 28, 1901.

³ Münchener med. Wochenschrift, June 25, 1901. Philadelphia Medical Journal, August 31, 1901.

now positively proven that nebulized medicaments reach the pulmonary alveoli of the human lung, of the lung of dogs, and of guinea-pigs.

Boni's¹ recent investigations lead him to doubt whether the alveoli are free from micro-organisms. He finds that the lungs of guinea-pigs are usually free from germs, but in many cases may contain micro-organisms, including such as are pathogenic. The lungs of recently killed animals (hogs) contain, in the majority of cases, germs, many of which are pathogenic. The most common of these is the pneumococcus. The lungs of healthy men in most cases contain a variable number of bacteria, among which the pneumococcus is most common. The virulence of most of these forms is diminished. In the healthy lungs of animals the bacillus tuberculosis is not present.

THE HEART AND BLOODVESSELS.

The Affections of the Pulmonary Bloodvessels and of the Pulmonary Circulation. Does the lung possess a vasomotor system? The long-delayed answer to this fundamental question, without which our theories of the physiology of the circulation, of the pathology of various pulmonary affections, and of the mode of action of our remedies are mere guesswork, is given in the negative by G. T. Brodie and W. E. Dixon,² whose important observations as regards the response of the bronchial muscles to nerve excitations and to drugs deserve our attention. They found (1) that the vagus nerve contained both constrictor and dilator fibres to the bronchial muscles; (2) that the sympathetic contained no such fibres; (3) that muscarine, pilocarpine, veratrine, and chloride of gold produced constriction of the bronchi (asthmatic effect); and (4) that atropine, curare, and to a less degree chloroform and ether vapors, caused dilatation of these tubes.

A further series of observations was directed to the changes in the pulmonary volume and in the size of the capillaries by comparing lobules with free access of air and those whose bronchus had been plugged.

The lung capillaries it was found became distended with blood when the aortic pressure rose, whether this rise had been produced by constriction of systemic vessels or by increased cardiac action. Failure of the heart, as a rule, also resulted in their distention. In asphyxia the lung volume increased during the first stage, but gradually declined during the second and third stages. Brodie and Dixon were not able

¹ Deutsche Arch. f. klin. Med., Band lxi., Heft 5 and 6. Philadelphia Medical Journal, November 16, 1901.

² Lancet, March 22, 1902.

to convince themselves that any vasoconstrictor fibres were supplied to the pulmonary vessels.

DILATATION OF THE PULMONARY CIRCULATION BY SUPRARENAL EXTRACT. T. G. Brodie's and W. E. Dixon's¹ experiments show that the main effect of moderate doses of this substance was to dilate the pulmonary vessels, although it was known to constrict the vessels in other parts of the body. This bears on the question whether suprarenal extract could act as a hæmostatic in cases of pulmonary hemorrhage.

SCLEROSIS OF THE PULMONARY VESSELS. H. Bruening² has devoted some study to the occurrence of angio-sclerosis in the pulmonary circulation in a series of 21 cases, 5 of which showed well-marked naked-eye lesions. It is remarkable that in several instances the aorta presented no sclerotic changes. The sclerosis was found chiefly in the pulmonary artery, and even occasionally in the bronchial artery, but never in the bronchial veins. In 11 instances there was evidence that some respiratory difficulty had existed during life. Mitral incompetence was present in 6 of the patients, and degeneration of the myocardium in 4.

PULMONARY EMBOLISM is in the minds of many almost synonymous with death; but careful observations, such as those of Edward L. Keyes, Jr.,³ shows that there are varieties of the affection not necessarily fatal, and that the mode of death is not always the same. He suggests a distinction between three types: (1) That of simple syncope with absolutely sudden death, as when a patient sits up, perhaps uttering a cry, and falls dead; (2) the more usual form of gradual but rapid suffocation, and, lastly, (3) the non-fatal cases in which severe symptoms of oppression, dyspnœa, pallor, followed by cyanosis, distention of the jugulars, exophthalmos, dilatation of the pupil, arrhythmia, and weakness of the heart's action, and sometimes of collapse, syncope, and even convulsions may be recovered from. His references to various cases constitute an interesting contribution to the literature of the subject.

Pulmonary Œdema. **ACUTE SUFFOCATIVE PULMONARY ŒDEMA** is described by J. Lindsay Steven,⁴ of Glasgow, as an affection totally distinct from the hypostatic œdema secondary to cardiac, pulmonary, renal, and febrile diseases; from acute or subacute œdematous inflammation; and distinct also from the "acute suffocative catarrh of adults and children" described by Laennec, which is an affection of the

¹ Lancet, March 22, 1902.

² Beiträge zur path. Anat., Jena, xxx. 3. Journal American Medical Association, January 18, 1902.

³ New York Medical Journal, April 5, 1902.

⁴ Lancet, January 11, 1901.

bronchial membrane. No account of it is found in text-books, and the references to it in literature are scanty and incomplete.

It is more than probable, however, that Laennec was familiar with the condition in question. Indeed, he specifies the distinction between the altogether fluid expectoration and that which he graphically designates as a "phlegmorrhagy." The passage is quoted by A. G. Auld in support of that condition, in the *Lancet* for February 22, 1902.

Hilton Fagg's cases of "An Oedematous Inflammation of the Lungs which Comes out Acutely and Without Previous Disease,"¹ do not exactly conform to this type.

Kingston Fowler² refers to "Cases occasionally observed in which oedema of the lung supervenes with remarkable rapidity during illness of acute onset." In a fatal case which he relates enormous quantities of frothy fluid were discharged after three days of fever and pain in the chest. No diagnosis was arrived at, and at the post-mortem it was classed as "acute pulmonary oedema."

According to Strümpell:³ "In very rare cases an apparently primary acute pulmonary oedema with a speedily fatal termination develops in men who were before that apparently perfectly healthy, and the necropsy gives no further explanation of its origin. We probably have to do in these cases with the sudden failure of the left ventricle."

Dieulafoy's⁴ description is, perhaps, the most thorough and complete. He describes it as "œdème brightique du poumon," and, therefore, concludes that it is a "complication terrible" of kidney disease.

The characteristics of the oedema will become apparent from the notes of the cases. Steven's first patient, a woman, aged thirty-eight years, had retired at 11 P.M. on January 29, 1901, in her usual health, when respiratory oppression set in, soon culminating in severe distress, with gasping and profuse discharge of whitish and at times pinkish froth, pectoral pains, and loud wheezing. When admitted to the hospital she was livid and apparently dying. There was no cough. The respirations numbered 34 per minute, the pulse 105, small, and regular. The temperature varied from 96.4° F. to 99.6° F. Fine and medium-sized râles were audible in the chest. She gradually recovered, and at 9 A.M., was able to lie down, and later in the day was almost herself again. The urine contained hyaline and granular casts, and a trace of albumin, which on February 5th had completely disappeared. This suggested that the case was one of acute and transient albuminuria with chest symptoms.

The second patient, a male, aged forty years, the subject of double aortic valvular disease and of mitral regurgitation, in addition to sub-

¹ Text-book, third edition, vol. i. p. 1002.

² Diseases of the Lungs, p. 281.

³ Text-book of Medicine, second American edition, p. 183.

⁴ Pathologie Interne, thirteenth edition, tome i. p. 282.

acute nephritis, was admitted on December 22, 1899, and died on January 27, 1900. On December 30th he was suddenly seized with great dyspnoea associated with cyanosed face, distended jugulars, clutching at the bed-clothes, cold extremities, and clammy sweat. Pulse 150, full and bounding. Râles were audible in the trachea and all through the chest; and there was an abundant expectoration of white frothy and subsequently of pinkish mucus. The attack was regarded as due to embolism of one of the large pulmonary branches; and the treatment consisted in brandy by the mouth and subcutaneously, oxygen inhalations and strychnine injections. He began to rally at the end of seven hours, but after twenty-four hours his pulse-rate was still 132, and the respirations 60 per minute. Similar attacks recurred on January 11th and 27th, and in the latter he died.

Steven's comments on these cases deal first with the symptoms. Their abrupt onset in Case I. and the rapid disappearance of the signs of renal disease suggest that the pulmonary œdema might in this case be regarded as primary, and the albuminuria as the effect, perhaps, rather than the cause of the pulmonary affection. But in Case II. the pulmonary œdema was merely a complication of chronic cardiac and renal disease.

A fatal case is related by F. W. Rowland,¹ that of a man, aged sixty-five years, who had been in perfect health until the day previous to the fatal attack. About midnight he awoke breathless, and began to expectorate copiously. He died about 2 A.M. The spittoon contained about 6 ounces of frothy, yellowish, serum-like fluid. Both lungs, but chiefly the left, were œdematous. The kidneys were healthy, as were also the other organs.

A most remarkable instance of the kind was reported by Thomas Lissaman.² A well-nourished healthy woman, aged forty-five years, suffered from the affection for two and one-half years, during which seventy-two attacks of "terrible dyspnoea" were recorded.

"The attacks were all as instantaneous in their onset as an epileptic fit. They varied somewhat in intensity and duration from time to time, but they were all characterized by these constant phenomena: suddenness of onset, intense agonizing pain in the chest, frightful dyspnoea, lividity of the face, profuse cold sweat all over the body, labored action of the heart, with a small rapid pulse, and, lastly, but most important, the ejection (one can hardly call it expectoration, for that implies coughing, which is almost absent) of enormous quantities of thin pink, seromucous fluid. I have measured as much as 42 ounces of this fluid in an attack lasting eight hours. I have never detected

¹ Lancet, January 25, 1902.

² Ibid., February, 8, 1902.

rise of temperature in the rectum or vagina during an attack. The attacks always occur at night. They are almost invariably preceded by a desire to go to stool, and the dyspnoea always comes on then during the act of defecation. They very often occur about the period of menstruation, especially if that is delayed a few days, as it often is, though it is normal in other respects.

“While subjected to the damaging effect of stimulation by alcohol and of the vaunted remedies for asthma, she seemed to be drifting into a condition of imbecility, as an epileptic does, until it was found that the inhalation of chloroform stopped the violence of the attacks. Slighter attacks—about two a month (instead of three or four a week, as in March)—still occur. She now says (January 12, 1902) she is better in every way than she has been for years. She is cheerful and confident, and can do her work as well as ever. The urine is not albuminous. She has lost all fear of the attacks, provided she has the chloroform, and five minutes is now about the time the distress lasts, and then ‘everything eases off.’ There has been no pinkish sputum for some months. She is getting rid of the habit.” Lissaman is inclined to regard the affection as a congestive “wet asthma” in contrast with the ordinary dry “asthma,” in which the pulmonary artery may be in a state of vasoconstriction. He believes that in acute spasmodic asthma it is the pulmonary artery that suffers spasm, and in acute pulmonary oedema the pulmonary vein.

THE DIAGNOSIS FROM PULMONARY EMBOLISM is based by Steven upon the rapid development, practically coincident with the onset of the dyspnoea, of white frothy, watery expectoration, which afterward becomes slightly pink in color. In embolism expectoration is a later development, and when it is established the sputum is definitely bloody from the first.

IN ACUTE SPASMODIC ASTHMA the distress of breathing may be very great, but there is no expectoration during the attack, the expectoration only being established when the dyspnoea is passing off, and usually being limited in amount to a few sputa of gray mucous pellets.

URÆMIC DYSPNOEA of the ordinary type is usually not so severe, it is not so sudden in onset, and it is unaccompanied by the profuse frothy sputum or by marked physical signs of pulmonary oedema.

ACUTE PULMONARY OEDEMA, with abundant watery expectoration, following the removal of a large pleural effusion somewhat resembles, as regards the expectoration at least, the affection with which we are at present concerned. Steven has seen this complication in a case where a large pleural effusion was removed by tapping, but although the amount of expectoration was very large and the spitting lasted for nearly twenty-four hours, there was none of the severe respiratory distress which was

so alarming in the two cases of acute suffocative pulmonary œdema narrated above.

THE TREATMENT comprised the rectal administration of stimulants, the hypodermic injection of strychnine ($\frac{1}{60}$ grain), and of digitalin ($\frac{1}{100}$ grain), complete rest in the sitting posture, a sinapism over the precordium, and hot-water bottles. Dieulafoy recommends bleeding or wet-cupping, in spite of the collapse, and this would seem to be the most direct form of treatment, if blood can be made to flow.

Acute pulmonary œdema should be treated, according to C. O. Donovan,¹ by the injection of sulphate of atropine ($\frac{1}{100}$ grain) and sulphate of strychnine ($\frac{1}{50}$ grain), repeated after half an hour or longer until their effects are produced. Meanwhile venesection is held in reserve in case of need.

Chronic Cyanosis with Hyperglobulia. This chronic cyanosis is not, like the usual form, due to any cardiac or pulmonary affection, but apparently connected with a disorder of the blood itself. Saundby and J. W. Russell² report a case of the sort in which the most striking change was the great increase in the number of red corpuscles (9,000,000, and hæmoglobin 120 per cent.), without any change in shape and without any leucocytosis. After death, beyond a slight mitral valvular defect, pulmonary engorgement, congested kidneys, and a large, smooth spleen (48 ounces in weight), no lesions were observed.

Similar cases have previously been published in the *Boston Medical and Surgical Journal* by Richard C. Cabot³ and by Sylvester F. McKeen.⁴

Although a full consideration of this new and important subject belongs to another section, there is a special reason for awarding it a passing mention because of its clinical resemblance with morbus cœruleus. A closer investigation of the blood in the latter may, perhaps, lead to the long-sought explanation of the fact that cyanosis is not always present in cases of free admixture of the arterial and of the venous blood and to the elucidation of the mechanism of cyanosis itself.

The Diagnosis and Prognosis of Heart Disease furnish the theme of many contributions, and among them of an instructive article by M. H. Fussell.⁵ This large subject is advancing, steadily but not *per saltum*. We are now equally distant from the indiscriminating pes-

¹ American Medicine, December 14, 1901.

² Lancet, February 22, 1902.

³ A Case of Chronic Cyanosis without Discoverable Cause, ending in Cerebral Hemorrhage. By Richard C. Cabot, M.D., Boston Medical and Surgical Journal December 7, 1899.

⁴ A Case of Marked Cyanosis Difficult to Explain. By Sylvester F. McKeen, M.D., Boston Medical and Surgical Journal, June 20, 1901.

⁵ Philadelphia Medical Journal, August 20, 1901.

simism which not many decades ago condemned so many lives as uninsurable simply because a murmur was heard, and from a complete appreciation of the significance of every individual departure from the normal action and from the normal sounds of the heart. It may, however, be said that more searching clinical observations and the growing study of the vital statistics of heart affections are daily increasing the proportion of cases in which a fairly accurate and often not unfavorable prognosis can be framed. In this connection the following subject which was briefly noticed in last year's report is of practical interest.

The Functional Ability of the Heart may be estimated, according to Martin Mendelsohn,¹ by determining the time which it takes the heart to return to its normal rate after any acceleration due to exertion. Within certain limits as to the severity of the cardiac effort, an immediate replacement of the material consumed in each preceding systole is the physiological rule, so that after the cessation of the work the heart, in the horizontal posture, immediately resumes its normal rhythm. He finds that the healthy heart in most individuals: (1) will quiet down immediately after a moderate exertion equivalent to between 100 and 200 kilogrammes; (2) that after work equivalent to between 200 and 500 kilogrammes the acceleration persists only for a short while, and the return of the normal rate may be preceded by a slight period of diminished frequency, but that (3) after heavier work averaging above 500 kilogrammes the recuperation is not immediate, and the frequency persists for periods varying with the amount of the strain.

In the presence of disease these relations are profoundly altered. For instance, an external work amounting to between 25 and 50 kilogrammes may prove too much for individuals who may not have been suspected of any coarse lesion.

The practical value of this line of inquiry is sufficiently obvious, and its introduction into clinical practice would be a distinct advance. In a small and very elementary way the same idea has been turned to account by physicians in determining the influence upon the pulse frequency of suddenly varying posture from the vertical to the horizontal, and *vice versa*. The physician whose advice is to regulate the amount of work undertaken by the patient is clearly under obligation to gauge, if possible, the competence of the organ for the work recommended. In connection with various groups of subjects, and particularly with the adolescent and the younger adults whose ambition usually lies in the athletic direction, the possession of any true test of this kind would

¹ Philadelphia Medical Journal, September 14, 1901.

be invaluable. Juvenile cardiac disturbances or slight valvular lesion may escape all recognition by the ordinary physical examination, but the inadequacy of the heart would be at once revealed by this method.

The method itself is simple. It needs the use of the ergostat, and Mendelsohn recommends that this apparatus should form part of our armamentarium. If the determinations can be made with accuracy the record would become available for comparison at a distance of time, and this would prove of much practical use.

To this there is one reservation. While the method might faithfully gauge the muscular response if muscle alone were in question, it does not indicate how much of the result should be attributed to other factors sharing in the regulation of cardiac rhythm. Readings laboriously obtained might still leave us in doubt as to how much of the abnormality is due to loss of muscular power and how much to increased irritability of nerves and of myocardial fibre. So long as this uncertainty prevails it may not be advisable to place too much reliance upon this form of clinical inquiry.

Splenic Hepatic Asystole. This novel term is specially applied by P. Oulmont to the enlargement of the liver and spleen occurring in cardiac insufficiency independently of the other results of loss of compensation and associated with anæmia. The two cases, that of a man, aged twenty-four years, and that of a woman, aged twenty-eight years, were characterized by anæmia and cachexia which followed rapidly upon the congestive hypertrophy of the liver and spleen. The leucocytes in the blood were not increased, but there was an increase in the hæmatoblasts. This new line of observation may find its application in connection with many cases of chronic heart disease in which profound alterations occur in the liver which cannot but interfere with the general nutrition and with the state of the blood; but hitherto this aspect of heart disease has not received much attention. Possibly the conditions referred to by Oulmont may not require a special nosological label, and may be but aggravated instances of a pathological process of relatively common occurrence.

Heart Disease in Pregnancy and Labor is not a subject belonging to this section, and yet the heart physician, as well as the gynecologist, is consulted on these points. Without attempting to consider any of the special aspects, attention may be called to an important paper in *Medicine* by Clarence Webster,¹ who devotes much care to the questions of treatment as well as to prognosis.

The Question of Anæsthesia for Surgical Operations in patients with heart disease is constantly brought before the physician in these

¹ Detroit, Michigan, February, 1902.

days of increasing surgical activity. The *American Journal of the Medical Sciences* for August, 1901, contains valuable practical papers on that subject by John M. T. Finney, Alfred Stengel, William J. Mayo, and H. A. Hare. Myocarditis is the condition most to be dreaded. Chloroform should not be used, and nitrous oxide is strongly contraindicated. As pointed out by Hare, in some forms of valvular disease marked improvement in the condition of the pulse may be noticed during the administration of ether. Finney is of the opinion that in cardiac disease the administration of ether rarely gives rise to bad symptoms, and that many can also take chloroform without any anxious symptom arising.

The Functional Disorders of the Heart. "CARDIAC NEUROSIS" is, perhaps, too convenient a term which plausibly disguises our ignorance. The assumption of a primary or reflex nervous disorder should not be hastily accepted in all cases lest it should retard our recognition of the true pathological etiology of some of the functional cardiac affections.

The fact is that the automatic heart-beat of the embryo precedes the formation of any nerves, and this suggests that the subsequent influence of the nervous system is largely a modifying and controlling influence. According to Engelmann's proposed nomenclature "inotropic," "dromotropic" and "chronotropic" stimuli reach the heart through nerve fibres respectively governing the force, the propagation, and the rhythm of the contractions; but that the contractile power is inherent to the muscular fibre itself. Moreover, independently of all nerve agency, the automatic rhythmic contractions are directly affected by chemical agencies, and the presence in the blood of a due proportion of the salts of sodium and calcium is an indispensable basis for efficient cardiac work. These are some of the considerations which cause L. F. Barker¹ to propose a more comprehensive term such as "disturbances of cardiac motility" for the abnormalities of rhythm known as tachycardia, bradycardia, embryocardia, intermittency, etc., which are commonly bracketed as neuroses.

UNDUE MOBILITY OF THE HEART is relatively common, and readily gives rise to cardiac symptoms and to arrhythmia, the significance of which may be misunderstood. In the present writer's experience it is usually bound up with increased roominess of the base of the thorax and with recurring distentions of the stomach, alternating with periods of relative emptiness, or with visceroptosis or gastropptosis. He entirely agrees with the view expressed by T. Rumpf,² that the evil effects of

¹ Chicago Medical Recorder, May, 1901.

² Deutsche med. Wochenschrift, August 1, 1901.

dyspepsia upon the heart are only partly reflex or toxic, but for the greater part mechanical. Rumpf relates an interesting case where excessive mobility of the heart, with dyspnoea and oppression on attempting to lie on the side, was induced in an obese young man by too rapid a reduction in weight (from 239 to 153 pounds). The heart's apex could be felt to move horizontally with each change of decubitus. This peculiarity and the symptoms disappeared when he had been allowed to fatten up again to a weight of 200 pounds.

CARDIAC ARRHYTHMIA. Few conditions cause greater alarm to the patient, and at times greater anxiety to the physician, who is accustomed to regard it as a danger signal and as the precursor of final failure of the heart. Yet many survive with it for years, and may die old, perhaps, of some other affection. In this uncertainty medical advice becomes a delicate matter. The patient has to be carefully guarded both against a reckless disregard of his symptoms and against the misery of constant introspection, and the physician's choice between opposites of treatment can only be guided by a correct appreciation of the case. It is worth noting that the worst degrees of irregularity are not necessarily the most ominous. All depends upon the degree of any underlying cardiac degeneracy.

Kisch,¹ of Marienbad, whose field of observation is among the obese, is impressed with the importance of arrhythmia as a symptom of latent fatty degeneration, and wisely warns against the risk of overexertion. But arrhythmia may exist quite apart from any myocardial lesion as a purely nervous cardiopathy. The patients in question are not usually of the fatty disposition, but the reverse, wiry and "on wires," full of nerves and of nervousness. For many of these there is no better heart rest than active muscular exercise.

To do justice to cases in this group, which also includes the toxic arrhythmia due to tea, tobacco, and drugs, we must banish from our mind the ghost of lurking cardiac failure. The exuberant and runaway heart must as it were be attached to the plough and steadied by subservience to muscular rather than to nervous activity.

This physical treatment is the more successful as it also provides for the hygiene of the entire body and in particular of the general nervous system, which in some cases may be more at fault than the cardiac.

Arrhythmia (strictly excluding that which belongs to mitral incompetence and to advanced loss of compensation) is of two kinds, the rapid and the slow. The former, perhaps, more alarming at first sight, is the less dangerous. Indeed, the readiness and the ability to contract are in excess of the requirements, and suggest an abundance of vitality

¹ Wien. klin. Woch., May 25, 1901.

and plenty of it to spare. The slow acting heart may not be deficient in vital force, yet, as it evinces a greater tendency to stop, any interference with its rhythm must be a source of special anxiety. Extreme bradycardia is usually, though not invariably, associated with atheroma of the vessels, including most often the coronary circulation; in cases of tachycardia there may be no trace of arterial disease. Irritability with weakness is a bad combination, but weakness without irritability would surely be much worse.

SLOW PULSE WITH SPECIAL REFERENCE TO STOKES-ADAMS' DISEASE. In his exhaustive study of slow pulse and bradycardia Robert T. Edes¹ draws attention to the subnormal temperature often associated with it. The rhythm of the heart and its abortive beats are studied with the sphygmograph as well as with the stethoscope. Special attention is devoted to the pathological etiology of Stokes-Adams' disease. A fundamental element in its complicated mechanism, which also includes a cerebral and pneumogastric factor, is considered by Edes to consist in a degeneration of the auricular ganglia owing to coronary disease. Space unfortunately does not admit of the complete review to which this excellent paper is entitled.

Johannesen² proposes to use atropine (as a subcutaneous injection of 1 milligramme) to differentiate between the bradycardia due to intracardial changes and that which is directly or reflexly determined through the influence of the vagus centre in the bulb. In the former cases the bradycardia is not affected by atropine, but in the latter, as the heart slowing apparatus is paralyzed by atropine at the terminals of the vagus in the heart, the bradycardia is at once relieved, as in the case which Johannesen describes and which was due to the softening from thrombosis of the left middle cerebral artery.

ESSENTIAL PAROXYSMAL TACHYCARDIA sometimes appears in childhood. An instance in point is reported by P. Merklen,³ in a girl, aged thirteen years, of rheumatic tendencies. The attacks of palpitation were associated with vomiting and dyspnoea. During the last attack the dyspnoea was recovered from earlier than the tachycardia. The pulse fell to 80 suddenly on the eighth day. Merklen's explanation of the condition is that acute dilatation of the heart existed. During convalescence the heart was found to be perfectly normal.

SYNCOPE AND SUDDEN DEATH VIEWED AS NEUROSES. Similar considerations are, perhaps, applicable to cardiac neuroses in general, to

¹ Philadelphia Medical Journal, August 17, 1901.

² Wiener med. Blätter, July 4 and 11, 1901. Journal of American Medical Association, September 7, 1901.

³ Journal des Praticiens, May 25, 1901. Philadelphia Medical Journal, August 10, 1901.

palpitation, to syncope, and even to sudden death. Huchard¹ states that "syncope, while a heart symptom, is always caused by some other affection, even when valvular disease happens to exist, never by heart disease," and that it is usually a nervous symptom, often epileptic, and then to be benefited by full doses of bromide of potassium, or in other cases by the iodides.

The occurrence of sudden death in the apparently healthy is a still greater mystery, which the papers of Lancereaux,² of Zuppinger,³ and of Kelsch⁴ do not fully clear up. There are reasons for doubting whether we are all of us capable of sudden death short of the strongest mechanical shocks to our semilunar ganglion or of the strongest doses of some cardiac poison. Experiences such as the following seem to show that some hearts are endowed with an amazing vitality.

AN UNUSUAL INSTANCE OF PERSISTENCE OF CARDIAC ACTION AFTER RESPIRATORY ARREST. In this case, that of a multipara, suffering from eclamptic coma when seen by Bidone,⁵ the respirations had stopped and artificial respiration was resorted to. While it was being kept up Cæsarean section had to be performed. Still the heart kept beating, and the respiration was artificially sustained for upward of five and one-half hours; but there was no return to consciousness, and at last the patient was allowed to die, chiefly, it is stated, owing to the prostration of the attendants.

Again, fatty cardiac disease leaving hardly a single fibre intact may not end suddenly; and cases of that description make us hesitate to ascribe to myocardial inadequacy sudden deaths occurring in those who present neither any history nor any appearance of myocardial decay.

When we look from the muscle into the finer nervous mechanisms the puzzle is not less great. Why do so many not die suddenly who so frequently faint? What constitutes the difference between the common dead faint and the faint that is deadly? The varying degree of the individual exciting cause is hardly a sufficient explanation; and we are left to suspect considerable individual differences in cardiac vitality. In the subjects in question we must either admit a higher degree of nervous susceptibility to relatively trivial toxic irritations, such as those which may arise within the body itself, or an innate tendency of the heart to stop. In either case, supposing that life might have been saved on the given occasion by a timely remedy, its tendency

¹ *Journal des Praticiens*, November 30, 1901.

² *Academie de Méd.*, March 11, 1902. *Lancet*, March 22, 1902.

³ *Wiener klin. Wochenschrift*, August 22, 1901. *Philadelphia Medical Journal*, November 23, 1901.

⁴ *Bull. de l'Acad. de Méd.*, Paris, July 23, 1901. *Journal of American Medical Association*, August 31, 1901.

⁵ *Ann. di Ostet.*, Firenze, 1901. *Edinburgh Medical Journal*, March, 1902.

must have remained ever precarious. On these lines certain reservations are indicated in connection with the theories which have recently been advanced as to the mechanism of sudden death. In Zuppinger's¹ cases of sudden death in children from myocarditis after apparently insignificant superficial ulcerations, although there was no definite septicæmia or discoverable germs, as in two of the cases nephritis coincided with myocarditis, and as the deaths occurred several days after the lesion, toxæmia cannot be excluded, and these were clearly not instances of "*la mort sans phrase*."

The army is, perhaps, the most favorable field for the study of this peculiar group of precarious cardiac lives, because of its picked material and of the hardening influence of physical training apparently adverse to excessive susceptibility, although it must be recognized that the soldier is essentially a neurotic subject. Kelsch² has collected 30 cases of sudden death; but in them he lays the blame upon latent rheumatic cardiopathies developing without symptoms and revealed only at death, which is precipitated by some extra exertion or excitement. The original cause is some poisonous influence—that of alcohol, diphtheria, typhoid fever, influenza, or other eruptive diseases, or the rudimentary lesions may be the result of intoxication from infectious products. Overexertion or excesses of any kind start these rudimentary lesions into an evolution which progresses insidiously to the fatal termination.

More probably to my thinking these subjects belong to the peculiar group of bad cardiac lives to which I would call attention. In the well-known tragic deaths of apparently healthy children recently suffering from diphtheria we have analogous possibilities. A large share in the fatal result may be due to an innate individual predisposition over and above the determining factor traceable to diphtheria; and we should treat every little patient as though possessing the idiosyncrasy to die suddenly.

In a much larger section, that of the gouty and dyspeptic adults to which Lancereaux invites our attention, we may reasonably expect a considerable contingent of representatives of this same group of individuals, bearers of an "*insecure cardiac vitality*." Lancereaux merely refers to an undue susceptibility which he attributes mainly to the influence of the gouty state itself. In 50 post-mortem cases of sudden death which had been regarded as due to pulmonary embolism or to the rupture of an aneurism, the organs were perfectly healthy, as well as the heart, which was found empty as in death by anæmia of the bulb. These deaths, according to him, were brought about by a gastric

¹ Loc. cit.

² Bull. de l'Acad. de Méd., Paris, July 23, 1901.

reflex specially apt to occur in gouty dyspeptics, the dyspepsia bringing about irritability of the heart, more particularly if dilated or surcharged with fat, just as indigestion will produce cardiac palpitation and weakness, or even syncope; or by some definite shock sufficient to have caused cardiac arrest, such as a blow at the epigastrium or a draught of iced water. In support of this view he remarks that most sudden deaths occur at an interval of four or five hours from the larger meals, viz.: between 4 and 5 P.M., and between 2 and 3 A.M., rarely between 10 and 11 A.M. Fortunately, only an infinitesimal number of dyspeptics and of gouty subjects with healthy hearts are liable to this catastrophe, but these experiences should enforce carefulness on the part of the physician and a disposition on that of the patient to follow his advice as regards regularity, moderation, and simplicity of meals, avoidance of acid substances, and other well-known rules. At the time of the heart failure, he recommends various restoratives, including traction of the tongue, slapping of the face, and injections of ether, of caffeine, and, above all, of morphine.

In connection with reflex irritation as affecting the heart and the respiration, it must not be forgotten that the diaphragm is not only a powerful muscle but also a sensitive recipient of nerve stimulations, and is, therefore, capable of an active as well as of a passive share in any disturbances of function. The presence of sensory nerves in the diaphragm and their functions have recently been reported upon by Mislavsky (Kasan),¹ at the Fifth International Congress of Physiology, at Turin. Stimulation of the central tendon of the diaphragm causes expiratory arrest of thoracic movement, a result not obtained if the vagus had previously been divided immediately above the diaphragm or in the neck. The expiratory arrest produced, together with contraction of the diaphragm by excitation of the peripheral segment of the phrenic, is no longer obtained after division of the vagus. The vagus is thus shown to possess sensory fibres within the diaphragm, playing a rôle analogous to that of its pulmonary fibres.

DIET IN THE FUNCTIONAL AFFECTIONS OF THE HEART. Considerable ground is covered by H. Illoway's² suggestive paper on the importance of a suitable regimen in the treatment of chronic heart affections, because he extends his consideration to the mechanical troubles which are apt to disturb even healthy hearts. This is eminently a subject in which the teachings of physiology give immediate support to our practical action. Physiology has taught us that the vagus may be irritated in the stomach and the irritation reflected upon the heart

¹ *Lancet*, November 9, 1901.

² *American Journal of the Medical Sciences*, March 9, 1902.

either by way of the vagus and cerebrum, or by way of the vagus, cerebrum, and sympathetic, or even indirectly by way of the primary impression upon the pulmonary vessels. On the other hand, Moritz has demonstrated the close mechanical connection between heart and stomach by obtaining a graphic record of the movements impressed upon the stomach by each systole of the heart. The chief results of these nerve irritations are arrhythmia, precordial pain, and dilatation of the right side of the heart.

It is obvious that improper food or its excessive amount might be capable of acting in both these directions as an irritant to the mucous membrane and at the same time as a source of mechanical distention.

Illoway gives considerable attention to the latter, which too often is left out of sight in our clinical theories and treatment. He points out that an enfeebled heart would resent any encroachment on the part of the stomach, that it might then no longer be able to drive the apex into the distended stomach to the extent proper to a good systole, and that the ventricles not being sufficiently emptied, the auricles would be overcharged, and the consequence might be a suffocative paroxysm.

These conclusions entirely agree with my own observations, but I venture to think that another factor should be borne in mind, the possible irritation and the possible undue tension of the diaphragm, which in its ordinary healthy play alternates a condition of complete relaxation with one of tension, the condition of tension or hardening of its fibres coinciding with the time when it is receding from the heart. Whereas, in conditions of mechanical stretching this contact is kept up through both phases of respiration.

Illoway enters into a careful detail of the varieties of diet which are suitable or to be avoided.

Cardiac Pain and Angina. Cardiac pain, exclusive of that special to acute diseases, to neuralgia, and to neuritis, has its origin in a disturbance of the balance between power and work. According to S. Markham Skerritt,¹ pain might thus arise: (1) When the heart was normal but work was in excess; or (2) when the heart was diseased: (a) primarily in its valves, or (b) primarily in its walls.

The first group includes the pain of overexertion, which is easily cured by rest, and that of vasomotor angina. This is the form of angina familiar to us in women of neurotic type, in early adult life and about the climacteric period, and in men from excess in alcohol or tobacco. It is determined under the influence of cold, of exertion attended with excitement, and especially of emotional disturbance, or again by certain blood poisons, especially uric acid, by ptomaines from

¹ Lancet, March 1, 1902.

the bowel, and by drugs of the digitalis class. Gaskell has shown that fatigue of muscle produces a tendency to cramps, and that an accumulation of the products of muscle waste induces acidity, which causes paralysis.

In the second group valvular disease as a whole is not so important a cause of angina as disease of the heart wall. Skerritt holds, in opposition to Walsh's teaching, that aortic regurgitation rather than aortic stenosis is the chief valvular cause of pain, as it taxes the ventricle severely and leads to dilatation and hypertrophy, and, finally, to degeneration. The myocardial degeneracy of angina pectoris itself is mostly secondary to coronary obliteration by atheroma.

THE SYMPTOMS OF CORONARY SCLEROSIS INCLUDE ANGINA, but this is only one of them. Neuburger¹ divides the symptoms into three stages marked by disturbances: (1) of sensation; (2) of motion; (3) of nutrition. In the third stage he notes the importance of the asthmatic-like attacks, and of the irregularities of temperature with slight evening rises which point to an imperfect removal of waste by an impaired circulation.

THE TREATMENT OF ANGINA is the only portion of Beverley Robinson's² comprehensive paper on angina to which space permits to allude. In prolonged and refractory attacks resort is recommended to morphine and atropine injections deep in the muscle, and, if necessary, in larger doses, or even to the dangerous help of chloroform inhalation. Oxygen inhalations are often of great value.

In the interval the health has to be studied in many details. Physical therapy is useful, but needs the physician's constant supervision, as this class of patients react to exercise so differently from day to day.

The Normal and Morbid Anatomy of the Heart. THE MUSCULAR LAYERS OF THE HEART. J. Bell Pettigrew,³ in a short retrospective notice of the great men of Edinburgh whom he had known, gives an interesting account of his own discovery made while working on the subject set by Goodsir for the Senior Anatomy Gold Medal for 1858-59:

"Casually taking up a newspaper I commenced to roll it layer upon layer obliquely from one corner, as grocers do in making conical paper bags.

"A closer examination of the newspaper cone, with its lines of print, revealed a mathematical arrangement of marvellous complexity and beauty; the lines of print on the outside and inside layers of the cone

¹ Philadelphia Medical Journal, August 31, 1901.

² American Journal of the Medical Sciences, February, 1902.

³ Lancet, November 23, 1901, p. 1399.

making left and right spirals continuous at apex and base and gradually changing direction and crossing at more oblique angles as the central layer was reached. Here was the whole thing in a nutshell. Pettigrew describes how he hit upon the expedient of stuffing and gently distending the hearts with dry oatmeal, a truly Scottish procedure, and slowly boiling them for from four to five hours."

THE STATE OF THE HEART AND OF THE VASCULAR SYSTEM AFTER DEATH BY ASPHYXIA AND BY CARDIAC FAILURE. J. A. MacWilliams' searching observations published in the *British Medical Journal* for April 5, 1902, are calculated to modify the views hitherto generally adopted in explanation of the post-mortem repletion of the right side of the heart and of the emptiness of the left side after asphyxia. As a matter of fact, the whole heart stops distended with blood. The whole process may be watched in anaesthetized animals by opening the thorax and inducing asphyxia by stoppage of the artificial respiration previously kept up. The left ventricle becomes distended first, owing to the peripheral arteriolar contraction. Distention of the right side soon follows.

The characteristic asphyxial condition of the heart as seen some hours after death is a post-mortem development, due to rigor mortis in the cardiac muscle.

The Physical Examination of the Heart. Karfunkel¹ believes that the true borders of the heart and of the great vessels may be determined with perfect accuracy by means of the X-rays. The normal heart measurements he finds with their help to be as follows: Greatest lateral diameter, 11 to 12 cm., in very large men as much as 13 cm. Length, 9 to 12 cm., smaller lateral diameter, 8 to 10 cm. Greatest distance of the border of the right auricle from the sternum, $2\frac{1}{2}$ to at most $4\frac{1}{2}$ cm.

PERCUSSION OF THE HEART is also capable of being perfectly accurate in the hands of thoroughly trained observers. This has long been shown by comparative post-mortem verifications of the outlines obtained during life. George M. Converse² revives this subject, and describes, under the name of "Potain's method," the *modus operandi* which has probably now become universal, and which includes as a necessity the determination of the upper level of the liver.

D. B. Lees' views on percussion are mentioned incidentally in his paper on "The Heart of the Child."³ He is quite content with finger percussion alone, which doubtless can accomplish much, and is always

¹ Zeitschrift f. klin. Med., Band xliii., Heft 3 and 4.

² Medical Record, May 11, 1901. Philadelphia Medical Journal, May 18, 1901.

³ Lancet, February 1, 1902.

available. His views as to the pleximeter are those of one who has not practised the art and is at a disadvantage in criticising it. The lightest percussion of all is that which can be obtained by means of the pleximeter, because its material being rigid and dense does not, like the finger, require considerable pressure against the object percussed before it acquires by compression the necessary conducting power. In both cases the lightest stroke is the best for fine work. This lightness of stroke does not exclusively belong to finger percussion, but is constantly used for the pleximeter also.

To be familiar with the use of the latter is to possess an additional help, which does not deprive the observer of his ever-present opportunity of using the finger.

Heart Sounds and Murmurs. POSTURE AND HEART MURMURS. W. Gordon¹ has done good service in calling attention to this neglected aspect of the technique of cardiac examination. His provisional conclusions will probably be regarded as the last word on the subject until the practical example which he has set has called forth additional, and, perhaps, more important observations.

1. Recumbency tends to increase all "hæmic" murmurs except the venous hum, which it tends to obliterate; to increase the murmurs of mitral regurgitation, tricuspid regurgitation, and aortic stenosis; to decrease the murmur of mitral stenosis, and to leave little, if at all, affected the murmur of aortic regurgitation.

2. The effects of gravity and of change in chest depth seems to account for the influence of recumbency.

3. In describing and discussing murmurs which posture modifies the patient's position at the time of observation should be stated.²

The diagrams sufficiently explain themselves. The mechanism of the changes in the murmurs is largely attributed by Gordon to the influence of changes in chest depth as the position of the body is varied, and to that of gravity.

The following illustrations will give some idea of the various changes described by Gordon :

HÆMIC MURMURS. 1. *In the Pulmonary Area.* The systolic pulmonary murmur is often markedly increased or first revealed by lying down, and the area of audibility may be greatly extended.

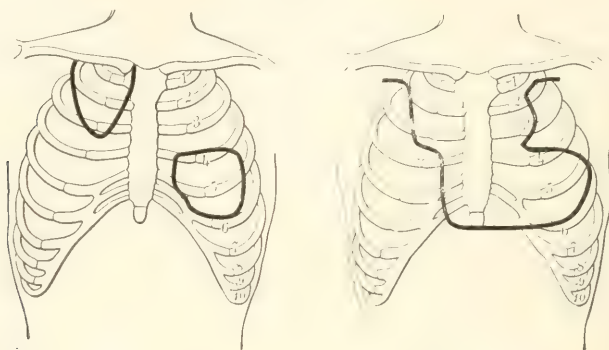
2. *At the Apex.* The systolic apical murmur is also greatly favored both in loudness and area of audibility. Fig. 2 illustrates the increase in area.

¹ British Medical Journal, March 15, 1902.

² Potain, Clinique Médicale de la Charité, quoted by Sansom in Allbutt's System of Medicine, vol. v. pp. 502, 504, 979. Gee, Auscultation and Percussion, 1893, p. 149. Braune, An Atlas of Topographical Anatomy, translated by Edward Bellamy.

3. *In the Aortic Area.* Fig. 2 also illustrates the fusion of two systolic "hæmic" murmurs, one apical, the other "aortic," and Fig. 3 similarly illustrates the fusion of a "pulmonary" with an "aortic" hæmic murmur.

FIG. 2.



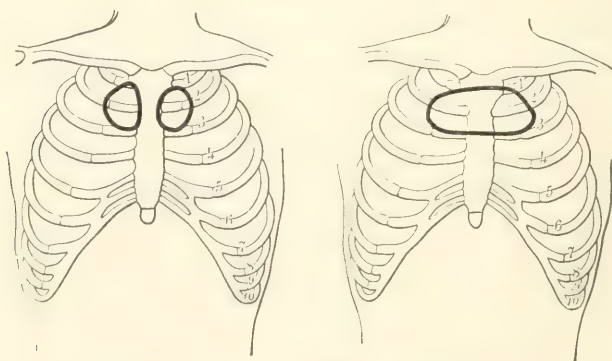
Erect.

Recumbent.

Two "hæmic" murmurs fusing on recumbency.

While we can agree with most of Gordon's conclusions, it may be well to add to them the statement of a well-known clinical fact which he would be the last to have overlooked, viz.: that in the orificial form of mitral regurgitation, as it occurs in dilatation, and in the valvular form, too, the murmur may be absent or inaudible during

FIG. 3.



Erect.

Recumbent.

Fusion of two "hæmic" murmurs on recumbency.

recumbency, but is at once called forth by the exertion of sitting up or of standing. This contrast with the behavior of the purely functional murmur is of the greatest diagnostic importance.

REDUPLICATION OF THE SECOND SOUND. C. C. Gibbes' paper in the *Edinburgh Medical Journal* for August, 1901, will repay perusal

by those interested in the elucidation of the mysterious auscultatory signs of mitral stenosis. Starting from the proposition that if any alteration occurs in the relative aortic and pulmonary pressure those valves close first on the side on which the arterial pressure is in excess of this normal ratio, he points out that there may be reduplications without a perceptible interval, and that then, as a rule, the point of maximum intensity of the first portion is in the pulmonary area, and that the intensity of the second portion is greater in the aortic area. In the mitral stenosis with an early diastolic murmur, if the reduplication should not be present the murmur is attached to the second sound; but if it should be present the murmur follows the second portion of the reduplication, and is then called a mid-diastolic murmur.

A THEORY OF COMPENSATION IN DISEASE OF THE MITRAL VALVE was submitted to the Clinical Society of London by Dr. T. Stacy Wilson on December 13, 1901.¹ Its details, included in eleven propositions, each of which is debatable matter, are too complicated to be considered in these pages, but as they are the result of long study and of careful observations, they cannot fail to supply food for thought and important suggestions to those specially interested in the study of mitral stenosis.

FLINT'S MURMUR IN AORTIC INSUFFICIENCY. W. S. Thayer's observations² on the frequency and diagnosis of this murmur were made at the Johns Hopkins Hospital. The study of 74 cases of aortic regurgitation which were examined after death since 1889 show that 45, or 60.8 per cent., of them had presented a rumbling, echoing diastolic apex murmur. Yet, as mitral stenosis existed in only 12 of these, Flint's murmur must have been present in a considerable majority of the cases. This murmur would thus be much more frequent than is usually suspected. Thayer estimates the frequency of the apex rumbling at fully one-half of the cases of uncomplicated aortic insufficiency. The clinical identification of Flint's murmur as distinct from that of true mitral stenosis, is chiefly based upon the relatively large pulse and the imperfect development of the snapping character of the first sound, and of the tapping character of the systolic impulse, together with the absence of any history of infectious disease, such as might have produced endocarditis. Nevertheless, its recognition is often difficult, as in a case diagnosed as mitral stenosis where no mitral disease was found.

DISAPPEARANCE OF VALVULAR MURMURS. The strangely variable character of the presystolic murmur and the capacity presented by some of its bearers for a recovery of compensation are well illustrated by the careful history given by James Tyson³ of a woman, originally treated

¹ British Medical Journal, December 21, 1901.

² American Journal of the Medical Sciences, November, 1901.

³ Philadelphia Medical Journal, May 18, 1901.

by him during her pregnancy for cardiac enlargement, with a tricuspid regurgitant murmur and mitral systolic and presystolic murmurs, who two years later was discharged, after a third admission into the hospital, free from murmurs and much improved in health.

THE ETIOLOGY OF VALVULAR DISEASE is presented to us in a somewhat novel light by Warobjen's investigation into the previous history of 180 cases treated at the Hospital Clinic at Moscow.¹ He finds that acute articular rheumatism plays a more important rôle than any single infectious disease, but is of less significance than the groups of all other causative factors taken together. Endocarditis is less commonly of rheumatic origin at all periods of life than is due to one of the many other causes. It is highly probable that non-rheumatic endocarditis is in the majority of instances not acute in its onset, but a chronic disorder from the beginning.

HEART DISEASE AND CHRONIC NODULAR RHEUMATISM. E. Barié² on the assumption that this form of arthritis belongs to the group of nutritional diseases which includes gout and diabetes, was prepared to find it as often accompanied as the latter with cardiac and pericardial affections. His cases prove that the association in question is a frequent one, and this must be the experience of physicians who have gone beyond the current but misguided statement that the freedom from cardiac murmurs is a point of distinction in rheumatoid arthritis, in contrast with true rheumatism, and who have examined for themselves as to the prevalence of valvular affections.

THE PRODUCTION OF MURMURS AS A RESULT OF THE USE OF THE ELECTRIC-LIGHT BATH in the great majority of a series of 52 cases examined by Thomas Howell³ is a fact worthy of attention both from the patient's point of view and from our own. The murmurs are evanescent in most instances; but the fact of their appearance is a striking proof of the potent influence exerted by the bath upon the circulation. The mechanism of these murmurs is not yet apparent. Howell believes that it is made up of a temporary dilatation of the aorta combined with an increased action of the heart. Whether this be the true explanation or not it is obvious that the circulation is placed under some stress, and a knowledge of this fact must be a warning to us to carefully consider the individual suitability of cases for this form of treatment. As Howell suggests, the purely temporary character of the murmurs and their occurrence in so large a proportion of the cases demonstrate that in itself a murmur is not a safe indication of the existence of heart disease.

¹ Deutsche Archiv f. klin. Med., Band lxi., Heft 5 and 6, p. 466.

² Semaine Médicale, Paris, May 8, 1901.

³ Boston Medical and Surgical Journal, April 3, 1902.

It is interesting to compare this experience with a statement contained in F. Neumann's paper on the Tallerman apparatus,¹ that the only unpleasant cardiac symptoms occurred in frightened, excitable individuals, and that in arterio-sclerosis, myocarditis, or valvular disease no bad effects resulted. A systematic examination of patients as to the effects of this treatment upon the heart and circulation is much to be desired in connection with the question as to its safety in cardiac cases.

Acute Endocarditis. ARE ALL FORMS OF ACUTE ENDOCARDITIS PARASITIC? The latest tendency is to admit the possibility of a parasitic etiology for all cases of acute endocarditis, whether ulcerative or not.

This idea is put pointedly in Kelly's instructive study of three cases of ulcerative endocarditis. The benign and the malignant forms run one into the other, and the nature of the species of the infecting agents might be almost regarded as of less importance than their virulence.²

Bartel,³ as a result of an examination of 23 cases of endocarditis of different types, has arrived at the conclusion that all cases of verrucose endocarditis are of mycotic origin, the amount of the vegetation depending upon the duration of the affection and the resisting power of the individual. In the same connection it may be mentioned incidentally that Luigi⁴ found staphylococci in 2 cases, and streptococci in 1 case of chorea, in the fluid withdrawn by lumbar puncture. If the endocarditis of chorea should be likewise mycotic, the view that chorea itself may be a parasitic disease would be considerably strengthened, and further suggestions might arise as to its treatment.

The most recent evidence in support of the parasitic origin of endocarditis in general is that which was laid before the Royal Medical and Chirurgical Society of London (April 8, 1902), by Poynton and Paine, who demonstrated the presence of a diplococcus in the verrucose as well as in the vegetative forms of the disease.

INFECTIVE ENDOCARDITIS AND ITS VARIETIES. Lenhartz⁵ contributes an important paper based upon a study of 38 cases, 33 of which proved fatal. In 18 per cent. of these cases the right heart was involved. The duration of the disease was from four days to eight weeks in the more acute cases, and from three to seven months in the chronic. Among the varied sources of infection he mentions pneu-

¹ Berliner klin. Wochenschrift, February 11, 1901.

² University of Pennsylvania Medical Bulletin, January, 1902.

³ Wiener klin. Wochenschrift, October 10, 1901. Philadelphia Medical Journal, December 14, 1901.

⁴ Riforma Med., April 1, 1901. Epitome, British Medical Journal, August 31, 1901.

⁵ Münchener med. Wochenschrift, July, 1901. Philadelphia Medical Journal, November 2, 1901.

monia in 1 case where the pneumococcus was obtained in pure cultures from the blood, and gonorrhœa in a case which completely recovered. He points out that rigors do not always occur. The treatment of the disease remains very unsatisfactory; Marmorek's serum is useless, and other methods have also failed.

PNEUMOCOCCUS ENDOCARDITIS. In Lannois and Paris'¹ case pneumococci were found on the aortic valves, which the authors believe to be those usually attacked by the pneumococcus.

BACILLUS COLI ENDOCARDITIS belongs to the rarer forms. S. E. Henschen reported a case of this kind in the *Upsala Lakareförenings Förhandlingar*, April, 1901, which began in June, 1899, with diarrhœa and vomiting. These symptoms recurred in December. The patient entered the hospital in January, with a diagnosis of ulcerative endocarditis, and died in February with secondary nephritis and bronchitis.

In a fatal case of malignant endocarditis likewise due to the bacillus coli, observed by F. W. Andrews,² the total duration was four months, the onset insidious and unexplained, and the symptoms typical.

ENDOCARDITIS CONSECUTIVE TO TONSILLITIS. In this instance the staphylococcus albus was traced by Henschen in the cerebro-spinal fluid; this patient made a partial recovery. In another patient, suffering from rheumatism and chorea, who died eight days after the onset of endocarditis, pure cultures of the staphylococcus albus were obtained from the blood, from the pleuritic effusions, and from the joints.

SYPHILITIC ENDOCARDITIS, according to M. Breitman,³ is always secondary to lesions of the myocardium, which mask its presence, and it is usually unaccompanied by murmurs. Even when treated early the syphilitic affection is likely to lead to permanent damage; and though considerable improvement may take place the valves may suffer in the direction of insufficiency or of stenosis as a result of the fibrous contractions.

THE DIAGNOSIS OF INFECTIVE ENDOCARDITIS. Kelly dwells upon the value of the following aids to diagnosis: (1) the recognition of a moderate leucocytosis of the polymorphonuclear kind (1500 to 3500 in 1 c.mm. of blood); (2) the presence of embolic phenomena, including retinal hemorrhages; (3) the positive result of the bacterioscopy of the blood; and (4) a peculiar instability of the heart's action which, sometimes, under examination will suddenly for a while assume excessive hurry and then quiet down again.

MALIGNANT ENDOCARDITIS GIVING WIDAL'S REACTION. Hale White and Pake's⁴ remark that typhoid most closely resembles acute

¹ Bull. Soc. Méd. des Hôpitaux, Paris, 1901, No. 8.

² Lancet, November 23, 1901.

³ Vrach, May 12, 1901.

⁴ Lancet, March 22, 1902.

tuberculosis, septic endocarditis and septicæmia, and that these are precisely the cases between which the test would seem to be unable to discriminate. Their patient, who was treated with various strains of antistreptococcus serum without any good result, had never had typhoid fever. Many observers have previously failed to obtain Widal's reaction in endocarditis, but in this case the agglutination test succeeded with five different strains of bacilli, in four instances with a dilution of 1 in 20, and in the first instance with a dilution of 1 in 200.

ACUTE VEGETATIVE ENDOCARDITIS OF THE PULMONARY VALVE, though by no means rare is sufficiently uncommon to claim attention. A case of this kind, fatal after five months' illness, in a girl, aged fifteen years, who had had rheumatic fever two years before, is reported by Edmund Cautley.¹ Numerous embolisms occurred in both lungs, but none elsewhere. The pulmonary valve was much thickened and puckered, and on two of the flaps were large warty vegetations with apparent loss of substance. All the other valves were normal.

THE RELATION OF PULMONARY TUBERCULOSIS TO ENDOCARDITIS. Endocarditis may be truly tuberculous, and this pure form is regarded as exceedingly rare by some, by others as comparatively common. But it may be due to other organisms while secondary to tuberculosis; or lastly, it may precede the pulmonary invasion. These three groups of cases are discussed by James Anders.² The old doctrine of an antagonism between valvular disease of the heart and tuberculosis of the lung seems to be borne out by the statistics; and Anders adopts the view that the immunizing influence is due to the pulmonary congestion of heart disease, while others ascribe it to cardiac hypertrophy. Aortic disease appears to be hardly ever associated with pulmonary tuberculosis; while disease of the right side of the heart predisposes to pulmonary tuberculosis. The pulmonary disease tends to aggravate that of the heart. These are not suitable cases for the altitudes.³

THE TREATMENT OF ACUTE ENDOCARDITIS. If all acute endocardites can be shown to be due to micro-organisms or their toxins we may be on the eve of a new departure in therapeutics. Since our last report no marked progress seems to have been made in the treatment of the malignant variety. Richard Caton's treatment, previously reported upon, addresses itself to the milder rheumatic forms, and especially to their prevention: and we have heard no further accounts of the results of his treatment in other hands. In malignant endocarditis the subcutaneous injections of antistreptococcus serum has been found successful in some cases; but I venture to think that though this

¹ *Lancet*, January 25, 1902.

² *American Journal of the Medical Sciences*, January 1, 1902.

³ *Philadelphia Medical Journal*, February 8, 1902.

may be a good remedy, it usually comes too late. A much earlier diagnosis is wanted. When we shall have ceased to divide the cases in two groups, the smaller one calling for heroic measures at a hopeless stage, while in the larger one the mischief is allowed to progress insidiously under inadequate measures of treatment, and when we shall have realized the paramount duty of dealing successfully with the latter class because by far the more numerous, the frequency of the malignant cases will diminish in proportion to the efficiency of our early treatment of the simple ones. If all endocardites are infective the most direct available form of antiseptic treatment is called for at the earliest possible stage.

In a short paper on "The Possibility of Recovery from the Acute Stages" of the affection, read before the Royal Medical and Chirurgical Society on April 12, 1902, in conjunction with Arthur Morley, I ventured to express a belief, hitherto not put to the practical test, that the intravenous injection of antiseptic agents may be found to be the most efficacious treatment of acute endocarditis. This would seem to be the most direct way of influencing the infection of the blood and of the endocardium itself.

Our antiseptic remedies are multiplying, and they may soon include an agent available for the arrest of the more severe types of infection as well as for the protection of the heart against the beginnings of a less virulent but none the less damaging form of endocarditis.

Acute Dilatation and Myocarditis. To what extent infectious diseases may dilate the heart primarily by a direct action of their toxins upon the myocardium, and how much of the acute dilatation is due to the resistance of an increased peripheral vasoconstriction, are questions not readily answered because the conditions must vary in individual cases.

H. Huchard,¹ in criticising Henschen's views, insists that the acute dilatation found in infectious diseases and in acute rheumatism is due to secondary atony of the myocardium following vasoconstriction and arterial tension, and he doubts the occurrence of myocarditis.

After Beriberi myocardial degeneration, apart from neuritis, has been observed by Arthur Stanley.²

Myocarditis in the full sense of the term is certainly not present in all cases of dilatation, but its occasional occurrence shows plainly enough the pathological tendencies at work. More definite evidence is needed for much of the myocarditis which is commonly assigned as a cause for symptoms of cardiac failure. As urged by Sansom and

¹ *Journal des Praticiens*, April 27, 1901.

² *Journal of Tropical Medicine*, November 1, 1901.

others, no inflammation involving tissue changes can be so evanescent as are often the symptoms of cardiac dilatation; whereas, infiltrations may undergo rapid absorption. Nevertheless, we must, I think, admit that the presence of slight myocarditis is not excluded by the occurrence of rapid improvement, although severe myocarditic lesions are not then likely to be present. A slight myocarditis, previously latent, would predispose the heart to resent fatigue, and likewise to suffer from temporary neuromuscular depressions sufficient to produce ephemeral dilatation.

All organic diseases have their functional stage, during which the structural alterations are too slight to be recognized, yet the function suffers. Many an attack never proceeds beyond this initial stage. Pneumonia may stop short at the stage of congestion, but during that stage the respiratory function will be profoundly affected. In like manner an acute rheumatic affection of the myocardium may never progress to the degree of myocarditis, and yet may deeply impair the working capacity of the muscular fibre. It may be worth noting that this impairment is not limited to the heart, but tends to affect the entire muscular system. Muscular exertion becomes impossible, and is entirely given up. For the heart alone there is no absolute rest; work it must, even when it is almost disabled. The extent of the dilatation is a resultant of the relative degree of the myocardial affection and of the amount of strain thrown upon the suffering organ. Probably neither of these factors is ever entirely wanting. Myocardial irritation and myocardial weakness are probably constant concomitants of acute rheumatism, even in the absence of fully developed myocarditis. I agree with Henschen and with Huchard in thinking that mechanical obstruction from valvular lesions has too often been called upon to account for cardiac dilatation. It is clearly shown by Henschen that in his cases, as no valvular lesions could be found, it was the lack of resistance of the myocardium which permitted the dilatation to occur.

THE DIAGNOSIS OF CHRONIC MYOCARDITIS. The exhaustive account presented to us in J. H. Musser's¹ paper makes us realize the great extent and comparatively ill-defined boundaries of this pathological field. In Musser's own words: "Myocarditis may exist (1) without definite physical signs; (2) with signs of moderate cardiac hypertrophy, marked reduplication being the only physical sign, and of significance only when coupled with signs of endarteritis; (3) with physical signs of dilatation; (4) with physical signs of fatty degeneration."

The difficulty of identifying latent myocarditis, even when it is

¹ Medical News, New York, January 11, 1902.

specially looked for, is now and again exemplified in connection with anæsthesia by disasters which occur in spite of a searching preliminary examination of the heart. This is dwelt upon in Mayo's important paper,¹ which refers to myocarditis as the most serious condition in reference to anæsthesia, difficult to identify and sometimes only discovered after the patient has died suddenly upon the table.

Myocardial degeneracy, as pointed out by Robert T. Edes,² may not be capable of absolute demonstration from any combination of symptoms; but usually definite conclusions can be arrived at practically. Jacobi has drawn attention to the difference between fatty degeneration of the slow pulse type and the more common form with a quick pulse, and he accounts for this difference by the occasional implication of the cardiac ganglia in the same process as the muscular fibres.

Biggs³ recognizes an arrhythmic type and a systolic type of myocarditis, the former he thinks associated with fibrous changes, the latter with disease of the coronaries, but there are other symptomatic groups, viz.: the tachycardial, the anginal, the asthmatic, and the bradycardial. He believes that bradycardia may accompany any form of myocardial disease, but tachycardia usually accompanies cardiac dilatation.

An important distinction is made by Musser between the two forms of myocardial dyspnoea. That due to dilatation is continuous, but aggravated by exertion; that caused by asystolism is sudden, associated with pain, œdema of the lungs, frothy expectoration, arrhythmia, and failure of the ventricular contractions.

The lesions of the myocardium apt to result from coronary arteriosclerosis are illustrated by A. P. Ohlmacher's⁴ 3 cases. In 1 of these there was simply softening in the district of the right coronary artery, which was sclerosed and thrombosed. In another case the anæmic softening had led to rupture of the heart; while in a third the sclerosis and obliteration of the left coronary artery were associated with fibrous myocarditis and aneurism of the heart.

MYOCARDIAL TUBERCULOSIS is discussed and references given to the literature of the subject by H. Newton Heineman among the other tubercular sections dealt with in his instructive paper on "Tuberculosis of the Heart."⁵ The favorite seat for the miliary tubercles is, according to Weigert, the ventricular wall. It is clear that no opening exists for a diagnosis of this condition, much less for any treatment.

¹ American Journal of the Medical Sciences, August, 1901.

² Boston Medical and Surgical Journal, September 26, 1901.

³ Yale Medical Journal, 1901, viii., 63.

⁴ American Medicine, July 6, 1901.

⁵ Lancet, December 28, 1901.

SPONTANEOUS RUPTURE OF THE HEART is usually the result of degenerative myocardial changes, which probably had acquired considerable local development. We are familiar with instances of extreme fatty degeneration of the heart, sometimes so great that the wonder is how any circulation could be kept up by so much enfeebled an organ. In these cases the intraventricular pressure is probably kept low by the gradual failure of the myocardium as a whole. Where, however, the major part of the latter is capable of powerful contraction, any part which has undergone considerable degeneracy would be exposed to a dangerous strain. This localized degeneracy might be due either to syphilis or to local and limited coronary obstruction. In these advanced degeneracies the ordinary systolic intraventricular pressure may suffice to bring about a rupture; and the fact that spontaneous rupture generally affects the left ventricle rather than any other part finds an explanation in the higher degree of pressure prevailing within it. This mode of occurrence is exemplified by 3 cases reported by George A. Rozie and John Findlay.¹ In 2 of the cases there was absolutely no history of any exciting cause, such as excitement or sudden exertion, the patient being in bed in one case, and quietly sitting on a seat in the other. In all 3 cases the lesion was situated in the wall of the left ventricle.

Another form of rupture rarely described is the giving way of an aneurism of the heart wall. Here, again, the rupture is a question of pressure and of resistance. A truly ulcerative process within the heart wall is exceedingly rare. Great interest, therefore, attaches to a case in which this occurrence has been reported by D. E. Anderson,² who described the condition as one of atheromatous ulceration of the heart, causing perforation and sudden death. The notes of the case, however show that most probably the ulceration was of a necrotic character from local coronary thrombosis, and that the atheroma belonged to the vessels rather than to the heart wall itself. Attention may be called to the interesting fact that the perforating ulceration was funnel-shaped. This may or may not suggest that the inner layers of the myocardium are less amply supplied with nutrient circulation than the outer. I have myself described a specimen, now in the museum of St. George's Hospital, in which a portion of the left ventricular wall was in a state of early gangrene owing to coronary embolism, but the process had stopped short of ulceration.

THE TREATMENT OF MYOCARDITIS is placed before us with much detail by John H. Musser,³ by Biggs,⁴ and others. Musser's compre-

¹ British Medical Journal, November 23, 1901.

² Ibid.

³ Fifty-second Meeting of American Medical Association, June 4, 1901. Journal of the American Medical Association, January 11, 1902.

⁴ Yale Medical Journal, 1901, viii., 63.

hensive paper includes much valuable therapeutical advice, medicinal, dietetic, and in connection with hygiene. The subject of angina receives its full share of attention. Musser recommends nitroglycerin and iodide of potassium as prophylactics between the paroxysms, and the avoidance of drugs causing a rise in blood pressure. He administers nitroglycerin in increasing doses, and in some cases he has given as much as $\frac{1}{2}$ drachm of the 1 per cent. solution, two or three times a day, with great benefit.

Digitalis is usually to be avoided. The dyspnoea which arises from dilatation may need the use of stimulants and even of digitalis; that which is caused by asystole with resulting pain, arrhythmia, frothy expectoration, and pulmonary oedema, may call for small doses of morphine with strychnine, or, if the arterial tension be high, for nitroglycerin. It is necessary, as Musser insists, to bear in mind the state of the circulation both in the viscera and at the periphery, as well as the local affection of the heart.

The January number of the *Practitioner* (London) contains papers well worth perusal by Foxwell on the prognosis and treatment of hypertrophied and dilated heart, and by Burney Yeo on the treatment of cardiac dilatation and asthenia.

“HORIZONTAL DILATATION” OF THE LEFT AURICLE. A new subject has been introduced into clinical pathology by the remarkable observation recorded by Isambard Owen and W. J. Fenton in the *Clinical Society's Transactions*;¹ for it had not previously been known that the left auricle is capable of being so hugely dilated as to encircle the right auricle from behind, and thus reach the anterior chest wall on the right side of the latter. This must have been the condition of the patient, a woman, aged forty years, when admitted on a previous occasion, in April, 1898, but it had not been even suspected, and in view of the pulsation which was felt at the right antero-lateral base of the chest, she had been treated on Tufnell's plan and with iodide of potassium for aneurism. When readmitted in November, 1901, this pulsation, as well as a systolic thrill and murmur were present, and the compensation was broken. A systolic and a presystolic murmur were also heard at the site of the apex-beat, which was remarkably depressed and was felt in the eighth intercostal space and posterior axillary line. The systolic murmur was audible over the whole cardiac area, with a sharp second sound. The presystolic murmur was less well marked and less constant. There were dulness and loss of breathing at the right base, as though from the presence of fluid. This circumstance and the

¹ A Case of Extreme Dilatation of the Left Auricle of the Heart. By Isambard Owen and W. J. Fenton, M.D. *Clinical Society Transactions*, vol. xxxiv. p. 183.

great dyspnoea led to the performance of paracentesis in the sixth right space in the mid-axillary line. Pure blood, rather dark for arterial blood, but not venous, was withdrawn. The patient was none the worse, but not relieved, and died four days later.

It is noteworthy that whereas the systolic pulsation extended from the second space to the seventh vertical, and transversely from the mid-axillary line to within an inch of the sternum, no pulsation was felt over the cardiac area except at the apex-beat. There was a second culminating point for the systolic murmur and for the thrill in the right sixth space half an inch outside the nipple line.

The left auricle, enlarged chiefly toward the right in its horizontal axis, held thirty ounces. Its wall was remarkably thin. It displaced the right lung out of contact with the diaphragm. The mitral orifice was dilated, the edges somewhat thickened, the chordæ tendineæ were somewhat shortened and thickened, the other valves normal. There was moderate hypertrophy of the ventricles with some dilatation. This abnormality is probably not likely to be often met with in its extreme form, but in its minor degrees it may sometimes have escaped the attention both of pathologists and of physicians. Owen's inquiries at all the principal museums and medical schools in the United Kingdom have shown that only two other specimens are known to be in existence, namely, one in St. Bartholomew's Hospital and one in University College.

A joint paper laid before the Clinical Society on May 9, 1902, by Isambard Owen and William Ewart dealt with the clinical aspects of the affection as studied in this case, and in a patient presenting analogous symptoms, who had been exhibited before the Society by the latter on January 25, 1902.

PULSATION OVER THE RIGHT AURICLE AS A DIAGNOSTIC PHYSICAL SIGN. It is well known that in the normal state no pulsation of the chest wall is occasioned by the contraction of the right auricle; and even when it has been considerably dilated, pulsation has not been hitherto described. Neither the writer nor those he has consulted remember this as a result of right auricular dilatation. When, as in horizontal dilatation of the left auricle and in other conditions still to be determined, pulsation is felt to the right of the sternum, and owing to the situation of the apex-beat can be identified as not due to the contraction of the ventricle, its importance in diagnosis is considerable. A note and a specimen bearing upon this physical sign were submitted to the Clinical Society of London, May 9, 1902.¹ The patient had

¹ Palpable Systolic Intercostal Pulsation in a Case of Mitral Stenosis, with Dilatation and Thrombosis of the Left Auricle. *British Medical Journal*, May 17, 1902.

been suffering from advanced mitral constriction, and from the ordinary variety of dilatation of the left auricle, which latter was filled with a huge spongy clot undergoing liquefaction. The pulsation at the right inframammary region was probably determined by the presence within the left auricle of this incompressible mass of clot, but the left auricle itself lay behind the right auricle and did not approach the anterior chest wall.

In J. Porter Parkinson's case of unusually great dilatation of the heart in a man, aged twenty-two years, exhibited before the Clinical Society of London, January 25, 1901, the symptoms and physical signs closely resembled those reported in Ewart and Owen's case. When admitted there were signs of a greatly enlarged heart, some œdema of the feet, and dyspnoea on movement, but no ascites. Pulsation was well seen on right of sternum below nipple, together with much epigastric pulsation.

At the apex a systolic and diastolic thrill were perceived, and below the right nipple a thrill occasionally presystolic and occasionally mid-diastolic. A rough presystolic and a blowing systolic murmur were heard at the apex, while the second sound was not heard. Just beneath the right nipple was heard a rough presystolic murmur and a short systolic one. The slight anasarca disappeared rapidly and the heart was somewhat reduced in size. This patient had never had any marked cardiac symptoms, and this suggested to Parkinson a possibly congenital origin for the cardiac and auricular dilatation and for the double disease of the mitral and of the tricuspid diagnosed by him.

The Treatment of Heart Disease. During the last twelvemonth no great innovation has been made in our methods, no revolution in our therapeutics, and no conspicuous addition to our drug list. But various papers on cardiotherapy supply us with useful retrospects.

In Gibson's three Morrison lectures at Edinburgh, the special details of management as well as of medication are definite and practical. For arterio-sclerosis he prefers iodide of sodium to potassium iodide. In simple dilatation without much evidence of degeneration, cardiac tonics are indicated, while vasodilators are called for in all cases with a spasmodic tendency. As regards the toxic states, while colchicum and the alkalies control the effects of uric acid, alcohol, tea, and tobacco, and other heart poisons cannot be fully antagonized, and their effects have to be lived down. Our dependence upon an improved metabolism is still more marked in connection with the results of microbic poisons such as those of influenza and typhoid fever. For the post-malarial form of angina, quinine and arsenic are to a certain extent specifics. Management is specially needed in the functional cases. In the group of the neurotic types of angina we require to

find out in each case the reflex cause, which often is visceral. In the cases identified with instability of the vasomotor mechanism, as in Raynaud's disease, the regulation of the function of the skin by baths, by sufficient clothing, and by judicious massage is of the first importance in addition to vasodilating internal agents. Then, again, neurasthenic and hysterical states call for an appropriate plan of treatment. This shows the importance of a careful adaptation of treatment to each case and the obvious danger of indiscriminately prescribing a method of cardiac treatment simply because it is in fashion, irrespective of any special risks in the particular instance.

HEART DISEASE IN CHILDREN is specially considered in another section of PROGRESSIVE MEDICINE, but some notice may be taken of papers by Marfan¹ and by Lees.² Marfan reviews the various lesions due to endocarditis and in connection with mitral regurgitation. He believes that this defect is well tolerated in childhood, and may sometimes be recovered from. He enters minutely into the consideration of the clinical aspects of the various valvular lesions and their treatment. Lees, who is a believer in the influence of the diplococcus of Poynton and Paine, thinks we should endeavor both to check these microbes and to repress the inflammatory myocarditis to which they give rise. Sodium salicylate in combination with sodium bicarbonate is the means of attaining the first of these objects; the second may be secured by leeches over the liver and by the local application of an ice-bag. Digitalis is not indicated at this stage, but only when ventricular dilatation and enfeeblement have resulted from the toxæmia.

THE TREATMENT OF HEART AFFECTIONS BY BATHS maintains its hold, but no important contributions add any novelty to the subject. The virtues of the Kissingen carbonic acid baths in heart disease are placed before us by Leusser, with the help of sphygmographic tracings. Stiffler³ has undertaken a study of the relative effect of the mud baths and of the ferruginous carbonic acid baths. His observations have been made with Basch's instrument. He concludes that the ferruginous baths have a "hydrostatic" action and the mud baths a "dynamic" action—the ferruginous baths tending to improve the equilibrium between the heart's action and the vascular tone, while the dynamic effect of the mud baths is an increase in the heart's tone and capacity for external work. Thus the former would be desirable in temporary heart weakness and in delicate cardiac conditions such as those of aortic disease and arterio-sclerosis. In dilatation and some forms of mitral disease mud baths might be preferable.

¹ Rev. Mens. des Maladies de l'Enfance, Paris, August, 1901.

² Lancet, February 1, 1902.

³ Münchener med. Wochenschrift, May 7, 1901.

Homer Wakefield, in his "Observations on Cardiotherapy,"¹ supplemented by a valuable bibliography, bestows considerable attention upon the Naheim treatment. The same subject is dealt with again by H. Newton Heineman,² who forms a wide estimate of the cases suitable for its use, among which he includes, besides most cardiac affections (excepting always advanced arterio-sclerosis, aneurism, and Bright's disease), rheumatism, gout, inflammatory exudates, functional and incipient organic spinal disorders, spinal congestion, neurasthenia, and early stage of locomotor ataxia, chorea, sciatica, and certain forms of neuritis, circulatory disorders, chlorosis, hamophilia and Barlow's disease, early arterio-sclerosis, aneurism only in its incipency, varicose veins and all vasomotor disturbances.

LOCAL PRESSURE IN THE TREATMENT OF HEART DISEASE. Abée's idea, referred to in our previous reports, has been submitted by Martin Mendelsohn³ to a systematic inquiry, with encouraging results, and he concludes that, while the main success of the treatment is in removing the subjective symptoms of distress, there is also a distinct gain in the working energy of the heart as tested by his own method, which was described at the Nineteenth Congress of Internal Medicine, at Wiesbaden, 1901, under the title of "*Die Erholung des Herzens als Maass der Herzfunction.*" His apparatus differs from Abée's, in that it is not so much a "heart support" applied to the region of the apex as a "chest compressor" covering as much of the cardiac area of the thorax as can be managed in the individual case, with a view to steadying the chest wall against the disturbing cardiac concussion. This is best effected by taking a plaster cast of the antero-lateral region of the chest for the construction of a metal plate which is lined internally with an inflatable air cushion and fastened around the chest. The degree of pressure which is beneficial and comforting is to be found experimentally by each patient.

THE PNEUMATIC CABINET exhibited before the meeting of the New York Medical Association, by Charles E. Quimby,⁴ should, according to the results described by its inventor, be found of great service in the treatment of heart disease. The rationale of any such mechanical methods is more easily thought out when we regard the circulatory function as a simple mechanical process. In this case the principle seems to be to, as it were, play upon the circulation within the heart and outside it by rapid variations of vascular tension. It is alleged that by suitable variations in the atmospheric pressures bearing upon the cutaneous and intrapulmonary surface, alternations of vascular

¹ Medical Record, New York, September 14, 1901.

² Ibid., June 22, 1901.

³ Berliner klin. Wochenschrift, August 26, 1901, No. 34.

⁴ Philadelphia Medical Journal, November 16, 1901.

tension would be brought about such as would maintain the circulation and increase cardiac nutrition. To do so successfully in the varieties presented by valvular disease and in the changing phases of each of these affections would in itself be a difficult task. But we cannot forget that there are in addition vital and neural factors which control the circulation with a delicacy of adjustment which no mechanical device can ever equal. Nevertheless, pre-conceived notions must not prevail against any results capable of practical demonstration.

THE RE-EDUCATION IN THE MOVEMENTS OF THE HEART BY METHODIC EXERCISES. The fact that some forms of extreme arrhythmia are relieved by active and open-air life lends considerable support to Lagrange's¹ contention that co-ordination in the movements of the heart may be re-established. His method professes to re-educate the heart after disturbances of compensation due either to mechanical or to functional defects. In the latter set of cases active movement is desirable, but the violent movements of the gymnasium are not to be allowed. The rhythm and steadiness of muscular action are the means of improving the circulation, but straining action hinders the object which we have in view. In the other group passive movement and regulated massage are indicated. Deep massage of the abdomen would be used in cases of arterial hypertension. Much can undoubtedly be done in a large proportion of cardiopaths by the use of these and other mechanical methods in the hands of real experts. It will be seen that in the case of these and other devices the Nauheim methods are practically presented to us under a different name.

DRUGS IN TREATMENT OF HEART DISEASE. The debate on "Cardiac Therapeutics," at the Nineteenth German Congress on Internal Medicine,² included an incidental discussion of the theory of the varying viscosity of the blood, which is, according to Hirsch, due not only to the corpuscles, but also to the composition of the serum, as bearing upon the production of murmurs, upon the etiology of ventricular hypertrophy, and upon the action of remedies.

Strange discrepancies came to light among various German authorities as to the relative value of the constituents of digitalis. It is not surprising that in the doubt which still seems to prevail the average practitioner should largely rely upon the tincture and the infusion when not using the leaves themselves.

Digitoxin is strongly believed in by Unverricht; while recognizing the risks of its cumulative property, he regards it as the best active principle in digitalis, and resorts to it in his practice. On the other

¹ Revue de Médecine, April 10, 1902.

² Philadelphia Medical Journal, May 18, 1901.

hand, Naunyn states that his experiments with digitoxin have proved to be negative, and Rosenfeld has likewise had no results. Rosenstein uses strophanthus largely, almost exclusively, finding that it produces no stomach disturbances. On the other hand, Sahli has witnessed disturbances of the alimentary tract, especially diarrhoea, and for this reason prefers to administer the French strophanthin pills rather than the more uncertain preparations. Various members spoke favorably of adonis vernalis as a milder substitute for digitalis. Rosenfeld uses it as a tea, one tablespoonful to a cupful of water twice daily. Baeltz also finds it useful.

The Nineteenth German Congress, in spite of its negative conclusions, has done good work in showing us that considerable uncertainty still prevails on fundamental points in the therapeutics of digitalis; and this may help to promote a further study of its physiological action in the normal organism, and if possible the adoption of some satisfactory method of determining the relative strength of individual preparations.

The therapeutics of digitalis are also discussed in various papers specially devoted to the consideration of its indications and contraindications. These include Robery Ingram's¹ contribution "On Some Uses of Digitalis." Alexander James'² clinical lecture, in which he contrasts digitalis and strophanthus, and a review of the experimental study of the action of digitalis in animals by Arthur R. Cushny,³ which confirms the accepted views as to the physiological action of the remedy.

The prolonged use of digitalis in moderate doses (from 4 to 6 grains daily) has the support of A. Jacobi's⁴ experience in cases of chronic heart debility such as chlorosis, phthisis, cardiac inadequacy, mitral insufficiency, chronic myocarditis, and acute myocarditis in the early stage, and lastly aortic incompetence. He finds that it can be continued for weeks or months with nothing but good results. The large doses (from 10 to 20 grains daily) are indicated in severe dilatation of the right heart, but are not intended for a long continuance.

The action of digitalis is contrasted with that of various heart tonics in Satterthwaite's practical review of the treatment of heart disease.⁵ In connection with all of them, but especially with digitalis, the chief note is "caution." In common with other drastic remedies, drugs of the digitalis group are being gradually avoided unless definitely called for.

¹ Cincinnati Lancet-Clinic, August 3, 1901.

² Scottish Medical and Surgical Journal, August, 1901.

³ Medical News, New York, January 11, 1902.

⁴ Ibid.

⁵ Post-Graduate, January, 1902.

Delirium and coma due to digitalis were described in 1874 by Duroziez.¹ Hall, of Washington, has recently published analogous cases of hallucinations or delirium. It must be borne in mind, however, that a tendency to delirium is a familiar symptom in cases of cardiac dropsy, even when no digitalis is taken, and may be due to some toxic influence from the overcharged dropsical fluids.

THE ACTION OF IODIDES ON THE HEART AND CIRCULATION. Any addition to our knowledge of the action of the iodides is of clinical importance. We learn from careful experiments by Ralph Stockman and Francis J. Charteris,² that sodium or potassium iodide when given to man by the stomach in ordinary doses has no depressing effect on the action of the heart or on the blood pressure in the arteries; therapeutical doses do not modify the physical conditions of the circulation, and that, therefore, they neither directly weaken the heart nor dilate the arterioles. The therapeutical effects must be due to some other mode of action, and this is probably true, also, of some of the rarely occurring poisonous effects. It is sometimes observed, for instance, that iodides quicken and weaken the pulse, and this has been specially frequent in goitre; sometimes also their administration is followed by emaciation. There is good reason for believing that in neither case is this a direct effect, but is due to increased formation or alteration of the iodine containing thyroid secretion, which has a powerful action on the circulation and on metabolism.

SUPRARENAL EXTRACT AND TAKAMINE'S ADRENALIN are recommended by A. L. Benedict³ as an appropriate cardiovascular stimulant in cases of relaxed tone of the circulation or "chronic shock," often associated with constipation, gastropnoia, etc., more especially when combined with heart disease.

THE TREATMENT OF HEART STRAIN, fully discussed by J. M. G. Carter,⁴ is to be considered from the standpoint of prophylaxis, of hygiene, of diet, and of medicine. The details must be adapted to the particular case, but the general principles suggested as applicable to all cases are such as will command general approval.

The Surgery for the Heart Valves. In a preliminary note in the *Lancet*, February 6, 1902, on the "Possibility of Treating Mitral Stenosis by Surgical Methods," Sir Lauder Brunton states that the good results obtained by surgical treatment of wounds in the heart embolden one to hope that before very long similar good results may be obtained in cases of mitral stenosis, but that his own observations

¹ American Medicine, June 29, 1901.

² British Medical Journal, November 23, 1901.

³ Therapeutic Gazette, New York, October 15, 1901.

⁴ Medical News, New York, January 11, 1902.

in the dead body and in animals have merely reached so far an experimental stage.

The idea of surgical interference had occurred to others, but none had been so bold as to recommend its adoption. Most will probably agree with the editorial remarks in the *Lancet* for February 15th: "Sir Lauder Brunton would have been better advised to have himself completed his experiments. In a dead and motionless heart the division of the mitral valve through a fine puncture in the ventricle is a difficult and very delicate step. How much more so when the operation is complicated by the rapid movements of the auricle and ventricle and the respiratory movements of the chest. Moreover, the incision in such a valve would show a great tendency to unite directly, and the state of the valve would then be worse than before."

It must also be remembered that the operation might convert the valvular lesion from a mitral stenosis into a mitral regurgitation, with very doubtful benefit to the patient. Nevertheless, the fact remains that for the lesions of advanced mitral stenosis there is only one line of remedying the mechanical relief of the obstruction to the circulation; and all hope of this result being some day attained should not be lightly set aside.

PERICARDITIS.

In the medical aspects of this subject the past year has not been productive of any important advance, although much earnest study has been devoted, particularly in America, to the various forms and relations of the disease. Valuable information of a general kind and on special points was contributed by Frank Billings, Joseph McFarland, Robert B. Preble, Robert E. Babcock, and others to the discussion reported in the *Philadelphia Medical Journal*, June 15, 1901, which, taken as a whole, was in the main confirmatory of current knowledge and opinion.

The Diagnosis of Pericarditis is studied by Edwards¹ with special reference to the physical signs.

Adherent Pericardium presents two well-known varieties, due respectively to pericarditis internal only, and to a combination of pericarditis internal and external, sometimes leading to the condition described as fibrous mediastino-pericarditis, or even spreading to the pleura and peritoneum and to the liver itself, which may undergo a secondary cirrhosis. On the other hand, the myocardium and the heart valves are apt to be implicated in the extension of the fibrosis inward. These are the anatomical conditions with which the physi-

¹ Medical Record, New York, February 8, 1902.

cian may have to deal, and which are clearly set forth in Robert H. Babcock's paper read at the Fifty-second Annual Meeting of the American Medical Association.¹ Babcock also provides us with an excellent picture of the clinical features by which it may sometimes be possible to identify the cardiac type and the hepatic type of the affection, and to trace their causation to a previous attack of adhesive pericarditis.

The Pathology of the Healed Fibrous Adhesions of the Pericardium² furnishes H. Gideon Wells with an opportunity for a profitable clinical retrospect. Seventeen cases are adduced in illustration of the varieties of the affection. Prominence is given to the fact that in many cases the condition is the result of a previous tuberculosis of the pericardium; but it is not contended that this is the only cause.

Calcification of the Pericardium, or "**Concretio Pericardii**," is ably treated by Wilhelm Türk.³ The subjects of this remarkable disease are supposed to be originally liable to a general "serositis," previously described as "perivisceritis" by Bamberger, which is apt to be associated with considerable portal congestion. As the pericardium becomes more closely and more rigidly adherent a progressive cardiac insufficiency is set up, and the special symptoms of ascites and hydrothorax gradually develop. Türk's article, which is well reviewed in the *Philadelphia Medical Journal* for December 7, 1901, gives us valuable information and some practical help, but it remains evident that an accurate diagnosis of this insidious disease will never be attained in all cases.

Tuberculous Pericarditis, just as the tuberculous affections of other serous membranes, is capable of recovery; indeed, as shown by H. Gideon Wells, a large proportion of the chronic fibrous thickenings of the pericardium are the remnants of a healed tuberculosis of the membrane. Nevertheless, it is important and satisfactory to have direct evidence of this change while actually in progress. In a case reported by Florence R. Sabin⁴ complete recovery took place after the discovery of bacilli in the exudate had proved the tubercular nature of the affection. It is an additional clinical feature of interest that repeated tapplings should have been necessary. The effusion contained besides tubercle bacilli a high percentage of mononuclear lymphocytes.

The Implication of the Myocardium in Pericarditis has long been known to pathologists without sufficient recognition being perhaps awarded to it by clinicians. Alfred Stengel⁵ has done good work in

¹ Journal of American Medical Association, December 14, 1901.

² American Journal of the Medical Sciences, February, 1902.

³ Wiener klin. Wochenschrift, xiv. Jahrgang, Nos. 37, 39, 40.

⁴ American Medicine, March 8, 1902. Philadelphia Medical Journal, March 15, 1901.

⁵ Journal of American Medical Association, December 14, 1901.

insisting upon the significance of this association in his paper on "The Role of the Myocardium in Pericarditis," and upon the physical signs by which it may be recognized. We must go beyond the mere friction sound, for this establishes no distinction between a simple pericarditis and one in which the myocardium is the chief sufferer. This grave affection is characterized by great and rapid enlargement of the heart, simulating hypertrophy, but due to inflammatory infiltration and accompanied by a quick pulse of low tension and by the slapping irritable cardiac impulse of Martius. In chronic pericarditis also the myocardium may be affected. Peripheral congestion or cyanosis, the peculiar enlargement of the liver sometimes termed "pericardial cirrhosis of the liver," the occurrence of dropsies and marked irregularities of the heart, are always indicative of associated myocardial trouble, and are, therefore, of grave prognostic significance.

The Clinical and the Pathological Aspects of Pericarditis are excellently reviewed in papers on these two subjects respectively contributed to the "Symposium on Pericarditis," at the Fifty-second Annual Meeting of the American Medical Association, by Frank Billings and by Joseph McFarland.¹

The Etiology is dealt with no less exhaustively by Robert B. Preble (*ibid.*), whose statistical data are of special value. While acute pericarditis is rarely primary, it occurs as a complication of various diseases in the following order of frequency: Pneumonia, 34 per cent.; rheumatism, 28.36 per cent.; chronic diffuse nephritis, 11.2 per cent.; tuberculosis, 10 per cent.; sepsis, 4.7 per cent.; aneurism, 2.6 per cent.; typhoid, 1.7 per cent. It is impossible in this brief notice to follow the author in his searching analysis of the relative frequency and prognosis of each of these combinations. It should be read in the original.

The Diagnosis of Pyopericardium. The difficulties in detecting suppurative pericarditis in children, which were pointed out by F. E. Batten in a paper read before the Cheltenham Meeting,² suggests once more that renewed efforts should be made to place the physical diagnosis of the affection upon a sounder basis. It may be remarked that when, as in this particular case, the difficulty lies in diagnosing a pyopericardium from a left-sided empyema, a skiagraph would in most instances differentiate between them, at least where both affections did not happen to coexist, and that this should be a preliminary to resorting to the needle for diagnostic purposes.

The Treatment of Acute Pericarditis suggested by M. Deguy materially differs from that usually adopted by our physicians. The

¹ Journal of American Medical Association, December 14, 1901.

² British Medical Journal, August 31, 1901.

administration of salicylates is not a preventive in rheumatic pericarditis, which he believes always develops first in front of the heart, while the effusion is generally posterior. The prophylactic treatment lies in a milk diet and the administration of caffeine, digitalis, and subcutaneous injections of normal salt solution. Calomel and counter-irritation are also of use.

Paracentesis in Serous Pericardial Effusions. Among the points in treatment dealt with by Frank P. Norbury's paper at the Fifty-second Annual Meeting of the American Medical Association,¹ reference is made to the general management of the case and special reference to that of the effusion. When the effusion is serous the tendency is for it to be reabsorbed, and the indication is not to interfere until some signs of urgency are shown by the dyspnoea, the small, rapid pulse, and the dusky, anxious complexion. The wisdom of this advice is manifested by the favorable course run by the great majority of cases of rheumatic pericarditis when carefully treated without operation; and for the present it may be regarded as sound practice not to interfere. In the exceptional cases in which interference may be absolutely necessary the special dangers of the use of the aspirating-needle are relatively diminished owing to the effusion having become considerable; but they are by no means excluded.

The Treatment of Purulent Effusions. When the effusion is purulent nothing but harm can accrue from delay. The pus must be evacuated by the only safe method, that of free incision. In my opinion there is much risk in trusting to the aspirator. Putting aside the danger of puncturing the heart if it should happen to be adherent, and the occasional risk of burying the canula in solid fibrin, which may effectually stop it, there are inherent grave disadvantages to the method. It is impossible to evacuate the contents of a pyopericardium, much less to wash out its cavity, through any small tube. The fact that we are dealing with a delicate organ is the best of all reasons why we should resort to an adequate operation, and thus escape the necessity for repeated interference. The selection of the level of the incision and of its shape must be left to the surgeon, who will probably prefer those which afford him most space. But it behooves the physician to recommend that its size shall be sufficient for the purpose in view, which is the clearing away of every drop of pus and of every shred of membrane, provided that no contraindication should arise in the course of the operation from the state of the patient under the anæsthetic. An incision of sufficient extent to allow of an exploration of the entire cavity by the finger seems to me to be a *sine qua non* for the successful treatment of pyopericardium.

¹ Journal of American Medical Association, December 14, 1901.

DISEASES OF THE ARTERIES.

Infective Arteritis and its Relation to Infective Endocarditis.

The proneness of infective organisms to settle upon the heart valves in preference to any other part of the vascular system being accepted as a fact independently of the full explanation, which is still missing, the occurrence of a secondary arteritis in various situations as a result of septic embolism from the heart, or of a colonization of micro-organisms at the seat of a chronic ulceration of the intima—and the formation of aneurism at the seat of infection are consequences which might almost be expected. This mode of causation is illustrated¹ by Huchard's case of mitral endocarditis with vegetations, ulcerative aortitis, and incipient embolic aneurism of the abdominal aorta, which terminated fatally in fifteen months, and by analogous cases observed by Le Gendre M. Simmonds in a paper in the *Deutsche med. Wochenschrift*, May 30, 1901, who draws attention to the relative frequency of cerebral hemorrhage from rupture of small aneurisms which, as in some of his cases, reveal their embolic origin from infective endocarditis by the presence within their walls of the same organisms as those occurring in the vegetations on the valves.

Arterial Tension and Arterio-sclerosis. THE STUDY OF ARTERIAL TENSION IN NEURASTHENIA has received much attention during the past year. The subject is mentioned by Charles Lewis Allen in his paper on "Arterio-sclerosis in its Relation to the Nervous System;"² and Fleury, in his report to the Academy of Medicine, describes a neurasthenia with low tension to be benefited by rest and tonics, and another neurasthenia complicated with symptoms of gout, lithæmia, alcoholism, and diabetes, in which the tension is high and which is curable by the elimination of toxins by exercise, a lacto-vegetarian diet, purgatives and diuretics.³ This passing reference to recent views of the pathology of neurasthenia may serve to illustrate the fact that the special consideration of arterial disease, whether functional or organic, cannot be monopolized in connection with any regional localization, and least of all with the thoracic organs. These are more sinned against than sinning, inasmuch as they take little part in the manufacture of any circulating poisons, but a considerable share in resisting, in oxidizing, and in eliminating those which are generated in the abdominal chylopoietic system. While, therefore, the main questions of arterial disease cannot be discussed without some reference to the

¹ Bull. de la Soc. des Hôp. de Paris, December 26, 1901.

² Philadelphia Medical Journal, March 29, 1902.

³ Journal of American Medical Association, August 3, 1901.

heart and to the lungs, we must pass over in this section, or only briefly refer to much interesting matter contributed under the heading of arterial tension and arterio-sclerosis as possessing much wider connections.

The discussion on arterio-sclerosis before the New York Medical Association, October 23, 1901, tended to confirm previous knowledge as to its various aspects, such as its etiology and symptomatology, treated by Charles E. Nammack, its cardiac manifestation, treated by De Lancey Rochester, and its management and therapeutics, dealt with by Egbert Le Fevre.¹

At the April meeting of the New York Academy an interesting discussion as to the influence of arterial spasm on the left heart was introduced by Judson Daland on the basis of clinical observation, and W. H. Thomson referred to cases in which the heart was subjected to intermittent strain, probably connected with fluctuations in the specific gravity of the urine. These fluctuations he had noted in various cases of chronic nephritis. There is much to support the view that arterio-capillary disease is always of toxæmic origin and best counteracted by fresh air.

Another useful paper on "The Early Recognition and Management of Arterial Degeneration" was read before the New York Academy of Medicine on June 6, 1901, by Louis Faugeres Bishop. Its leading idea was that there is an early functional stage to the disease when all the symptoms so familiar in its advanced stages are, as it were, foreshadowed. This bears most closely upon the question of treatment, as it points to the importance of hygiene and of an avoidance of all toxic influences, including alcohol, and as it hints also at possible dangers from too much digitalis, with its arterial constricting effects, or from too much iron, well known to act upon the bloodvessels as an astringent. Alkalies to soothe the irritated bloodvessels, water to flush them, and vegetable bitters for the sake of their tonic effects belong to a safer class of medication.

THE THREE HYPERTENSIONS—ARTERIAL, PULMONARY, AND PORTAL—described by Henri Huchard,² are familiar to all as clinical conditions, but his nomenclature is a welcome aid to their separate study. To them might, perhaps, be added a fourth, the *venous hypertension*. Presclerotic angina, stenocardia, uræmia, gout, and interstitial nephritis, are all instances of arterial hypertension leading to secondary heart trouble, but in which the original cause is a hypertonicity of the arteries due to peripheral irritation; and they call for hypertensive

¹ Philadelphia Medical Journal, November 2, 1901.

² Journal des Praticiens, July 6, 1901. Philadelphia Medical Journal, September 14, 1901.

remedies, such as erythrol tetranitrate and suitable diet, excluding meat. Where the trouble is originally cardiac, hypertension commonly obtains, at least at first. Pulmonary hypertension is seen in mitral diseases, and particularly in stenosis. If it should coincide with aortic hypertension, arrhythmia and palpitations are set up. Portal hypertension, which may be acute, subacute, or chronic, coincides physiologically with anaemia, with arterial hypertension and with various toxic states, and sometimes with an irregular menopause. Clinically it is associated with pyelephlebitis, with atrophic cirrhosis, loss of cardiac compensation, etc. The tendency to hemorrhage and to obesity is counteracted by treatment, and particularly by abdominal massage and a bland diet of milk and vegetables. The three varieties of hypertension may coexist in the more serious cases. Each of them claims treatment, and much depends upon their early relief (especially of that last described), in order to obviate the development of arterio-sclerosis and its results.

OF PRESCLEROTIC ARTERIAL TENSION it might truly be said, "*Voilà l'enfermi*" if arterio-sclerosis could be proved to be not only its sequel but its direct outcome. Matters may not be quite so simple. It has been ably argued by William Russell¹ that while recurring or continued hypertonus is the origin of the thickening of the muscular coat, the thickening of the intima results from a different cause, the circulation in the blood of various toxic substances leading to sub-epithelial connective-tissue hyperplasia. This conception of the evolution of arterio-sclerosis explains the varying time it occupies in different subjects. "In some the hypertonus comes on early in life, and in early middle age sclerosis is established. In some hypertonus is but an occasional occurrence, and sclerosis appears later in life. The capability of the arteries to contract when an excess of toxin is present is, in Dr. Russell's experience, seldom lost; and its recognition in sclerosed vessels is of great practical importance." Moreover, as pointed out by Nammack, the individual variations in the thickness of the arterial wall must be taken into account, and it has always been held that the tendency to this change was partly inherited.

Cold may have a share in the production of arterio-sclerosis. This suggested itself as one of its possible causes in the course of von Manteuffel's researches² on the influence of cold upon various tissues. Among the changes observed, which included osteo-arthritis, there was a marked arterio-sclerosis with its typical lesions.

Nammack dwells upon the ill-understood factors of overwork and worry, which tell severely upon many, and particularly upon medical

¹ British Medical Journal, May 18, 1902.

² *Centralblatt f. Chir.*, Leipzig, January 18, 1902. *Journal of American Medical Association*, February 15, 1902.

men, 35 per cent. of their number dying from the three chief consequences of arterio-sclerosis, Bright's disease, apoplexy, and heart disease and calcification. Anginal pain has variously been ascribed to neuralgia or to neuritis of the cardiac nerves, to stretching of the nerve fibres within the heart wall, and to aortitis. Allan Burns had advanced, in 1809, that the condition was one of transient ischæmia of the heart muscle from disease or spasm of the coronary arteries. As in "intermittent claudication," met with in the horse and also in man, transient paraplegia and spasm might follow exertion, owing to thrombosis of the abdominal aorta or the iliac arteries; so in a heart with calcified coronary arteries any extra exertion might cause ischæmia and spasm. Parkes Weber has suggested that the cramp pains and loss of power in muscle are both due to the accumulation of waste products, and that they are more easily caused if the vascular supply is not enough to flush properly the muscle when in action. When the vessels were altered by disease the flushing of the tissues with blood while in action was interfered with; hence the phenomena of paralysis and pain met with in angina pectoris.

The treatment of cardiac pain aims at restoring the balance between work and power: (1) By increasing the power of the heart, or (2) by lessening its work. The latter object is usually the easier one to attain, thanks to our vasodilator remedies, though, as remarked by A. E. Sansom, they are as liable to abuse as drugs with a sedative action. Sansom has seen but little benefit from the nitrites, and prefers phenacetin and antipyrine to opiates.

Dilatation and Hypertrophy of the Heart. The earliest effects of the arterial changes tell in the direction of dilatation and of hypertrophy. Acute cardiac dilatation is a well-known result of various intoxications acting directly upon the heart; but arterial spasm, which they also set up, is a potent factor in its production. As regards hypertrophy, Thomson's view, that even prior to the development of atheroma (which, as he says, is not invariably accompanied by cardiac hypertrophy) intermittent strain may be thrown upon the heart by the recurrence of vasomotor storms, will meet with universal recognition. This is but an illustration of the old aphorism that intermittent pressure tends to set up hypertrophy, and continued pressure, atrophy. The final result is dilatation, because arterio-capillary disease means a permanent and growing resistance; but the *causa causans* is always toxæmia. Fortunately, many toxæmias are temporary, that, for instance, which sets up the heightened blood pressure of the menopause, and many are curable, and their rational treatment, as insisted by Thomson, is perfect hygiene, and their direct remedy is abundance of fresh air.

The Relation between Disease of the Kidney and the Cardio-vascular System. Sir William Broadbent's¹ views on this subject are well known to the profession, and need not be reproduced. The convulsive element in renal disease seems to him not altogether dependent upon the toxic factor of uræmia, but to a great extent dependent upon alterations in the cerebral circulation. The early convulsions of tubal nephritis may be thus explained by stasis in the cortical cerebral circulation, while Stokes-Adams' disease is, in his opinion, due to high arterial pressure.

The Diagnosis of Arterio-sclerosis. W. G. Conklin,² in dealing with "The Cardiovascular System in Interstitial Nephritis," describes F. Friedmann's sign for the early diagnosis of arterio-sclerosis: a clangor or groaning character of the aortic second sound, half-way between the seventh dorsal spine and the lower angle of the left scapula, whereas the normal maximum of this sound is heard at the level of the scapular spine.

A fresh diagnostic sound is described by Chuchwsky.³ It is possible to provoke at will a dilatation followed by a contraction of the arch of the aorta, recognizable by percussion, provided the vessel has not lost its elasticity. The dilatation, which is accompanied by a marked lowering of the sphygmographic wave, is brought about by striking the upper sternal region rather heavily. The inverse phenomena, due to a narrowing of the vessel, are produced by striking two or three sharp blows on the epigastric fold.

This test is one suited only for adepts in percussion. The sources of fallacy are great, and above all it is essential to remember that the term "aortic dulness" is a misnomer. The dulness is largely due to the other great vessels, as is implied in the term "prevascular dulness" which I introduced some years ago (cardiac outlines). Friedmann's sign is, perhaps, more reliable, though here again the complicating conditions are too variable to lend themselves to any rigid accuracy of demonstration.

The Treatment of Arterio-sclerosis. The treatment of arterial hypertension and of arterio-sclerosis is first and foremost hygienic. Toxæmia must be prevented or corrected by suitable diet and by visceral sanitation. Among medicinal agents the iodides are unsurpassed, and should be administered unless contraindicated by renal disease. In the iodides we possess a remedy which steadies the circulation and lowers arterial tension without reducing the force of the systole. There are abundant reasons for avoiding digitalis, which should, accord-

¹ Practitioner for November, 1901.

² American Medicine, December 14, 1901.

³ La Semaine Médicale. International Medical Magazine, May, 1902.

ing to De Lancey Rochester, only be prescribed at an emergency and for very short periods. Extract of cactus is to be preferred. For the relief of cardiac seizures the inhalation of nitrite of amyl and the subcutaneous injection of nitroglycerin, sometimes in combination with morphine and atropine, are to be recommended. But Egbert Le Fevre remarks upon the evanescent effect of the nitrites, and suggests that they might, if too freely used, hasten degeneration. The administration of heart tonics, and even of digitalis, becomes opportune when the cardiac hypertrophy is no longer adequate to overcome the obstruction set up in the vessels. It is doubtful whether the theoretical aim of depriving the calcifying vessels of a supply of lime salts belongs either to sound pathology or to practical therapeutics. Hygiene and diet are also insisted upon by Harold Moyer¹ as the first essential in the treatment of arterio-sclerosis. Iodide of sodium well diluted may be continued for months in 5 to 7 grain doses. Large doses of nitroglycerin are often well borne. Any recent syphilis would call for vigorous treatment.

Trunecak's inorganic serum treatment, judging from the absence of any further reference to it, does not appear to have been extensively taken up.

THE BALNEAR TREATMENT AND ITS EFFECT UPON BLOOD PRESSURE. Schott² contends that in suitable cases treatment by baths raises the blood pressure, after a while persistently; where it is contraindicated, as in acute heart disease, advanced myocarditis and arterio-sclerosis and aneurisms of the heart and great vessels, a marked fall occurs, together with a rapid, small pulse and accelerated respirations. The effects of the bath upon the tonometer tracing can be thus used as prognostic and therapeutic indications. Gymnastic treatment also leads in healthy people and in cardiopaths in whom it is indicated to a rise of blood pressure, while massage produces little or no effect.

In using Gärtner's tonometer for the rapid determination of the variations, he is careful to apply it always in a uniform way, particularly as regards the position of the hand bearing the instrument, which should be on a level with the heart.

Aneurism and its Treatment. ON PSEUDO-ANEURISMAL FUNCTIONAL DILATATION OF THE THORACIC AORTA. The familiar occurrence of this condition in the abdomen might have led us to suspect the liability of the thoracic aorta to suffer in the same way; but this does not appear to have been thought of until the Röntgen rays were able to supply a demonstration of the dilatation. The diagnosis between

¹ Medicine, October, 1901.

² Deutsche med. Wochenschrift, 1901, Nos. 22 and 23. British Medical Journal, July 13, 1901.

true and spurious aneurism of the abdominal aorta is complicated by the fact that pain is a symptom common to both affections. The same difficulty may be expected in the thorax, and adds to the risk, of which we have now become aware, of our mistaking simple functional dilations for thoracic aneurisms.

In a patient whom I recently exhibited before the London Polyclinic, aortic aneurism had twice during the last thirteen months been diagnosed by skiagraphy, but the absence of all abnormal appearances on subsequent examinations proved the case to have been one of functional and temporary dilatation of the thoracic aorta; and it is probable that some of the pain complained of at the base of the thorax, as well as some of the neurasthenic and neurotic symptoms from which the patient was suffering, may have been connected with the same affection. The study of the variations in the size of the thoracic aorta by means of the X-rays is likely to lead to interesting clinical results.

THE DIAGNOSIS BETWEEN AORTIC ANEURISM AND MEDIASTINAL TUMORS, though somewhat facilitated by skiagraphy, still needs further help. From a study of 150 cases of aneurism, 200 cases of stenosis of the œsophagus, and many cases of mediastinal tumors, P. Hampeln¹ finds that whereas tracheal stenosis is much more commonly due to aneurism (18 times in 20 cases of stenosis) than to neoplasm, marked œsophageal stenosis is very rare as a result of aneurism (1 in 140) and, therefore, strongly suggests the presence of new-growth. It is well known to physicians that fatal hemorrhage sometimes occurs from an aneurism perforating the œsophagus, where little complaint of dyspepsia had been made during life. The explanation lies in the relative mobility of the œsophagus, which aortic disease tends to push to one side, while a neoplasm tends to fix it. Paralysis of the recurrent occurs in about the same percentage in the two series and leaves the diagnosis partly dependent upon the history of the case. Mature age and cachexia are in favor of cancer; an earlier age and a history of syphilis, in favor of aneurism.

The tracheal tug is a diagnostic sign needing careful interpretation; Sewell² directs attention to an additional mode of production. A tracheal tug quite palpable in character is, in the majority of cases, associated with and dependent upon adhesions of the left pleura. Normally the downward stroke of the transverse aorta on the left bronchus is expended partly on the trachea, partly on the upper lobe of the left lung, and it stretches the latter rather than pulls down the relatively fixed trachea. If the left lung be fixed to the chest wall by

¹ Zeitschrift f. klin. Med., Band xlii., Heft 3 and 4.

² American Journal of the Medical Sciences, August, 1901.

adhesions, and especially if there be any fibrosis, it cannot be pulled down or stretched, and there is a tracheal tug.

THE MODE OF DEATH IN THORACIC ANEURISMS WHICH DO NOT RUPTURE has been recorded in a series of 5 cases by H. D. Arnold.¹

Intercurrent pneumonia proved fatal in one, aortic regurgitation with dilatation and asystole in another. In the remaining cases death resulted from mechanical obstruction to the respiration, to the circulation and to alimentation by direct pressure on vessels, air tubes, and œsophagus respectively.

MITRAL OBSTRUCTION FROM THE PRESSURE OF AN ANEURISM OF THE DESCENDING AORTA is described by S. E. Henschen.² The patient, aged eighteen years, had a presystolic murmur loudest over the pulmonary area, and had been under treatment for three years with a diagnosis of mitral obstruction. At the autopsy no valvular lesions were found, but the heart was hypertrophied and dilated, and concealed between it and the diaphragm an aneurismal tumor which exerted pressure only upon the left auricle and ventricle. It is stated the left auricle could not dilate on account of the aneurism. From a spot 2 cm. below the subclavian the aorta was the seat of endoarteritis, with a collection of aneurismal sacs down its anterior wall resembling the lobular aspect of a thyroid.

SLOUGHING OF A PORTION OF A CONSOLIDATING ANEURISM PROJECTING ON THE UPPER PART OF THE CHEST is described by T. R. C. Whipham³ in a remarkably chronic case beginning with cough and thoracic pain in 1884, and developing a parasternal swelling in 1886. Declining operations, the patient seemed to improve under restricted fluids and prolonged treatment in bed in 1886 and 1887, following his employment again until 1892, when he again recovered from an alarming condition under iodide. Since then the tumor increased at intervals. In August, 1899, oozing first occurred. In February, 1901, the tumor was becoming conical, and the leakage had recommenced. Sixty hours after a rigor on April 9th, the whole of the projecting part of the aneurism became detached, leaving a cavity in the chest with only slight leakage. No symptoms followed until after eight days, when the aneurism, which occupied the whole of the ascending and transverse arch, suddenly burst externally.

THE TREATMENT BY GELATIN INJECTIONS. Though no longer a novelty, Lancereaux and Paulesco's treatment is still a subject for PROGRESSIVE MEDICINE, as it is practically unknown to many, and its capabilities probably known to few. On comparing the divergent

¹ American Journal of the Medical Sciences, January, 1902.

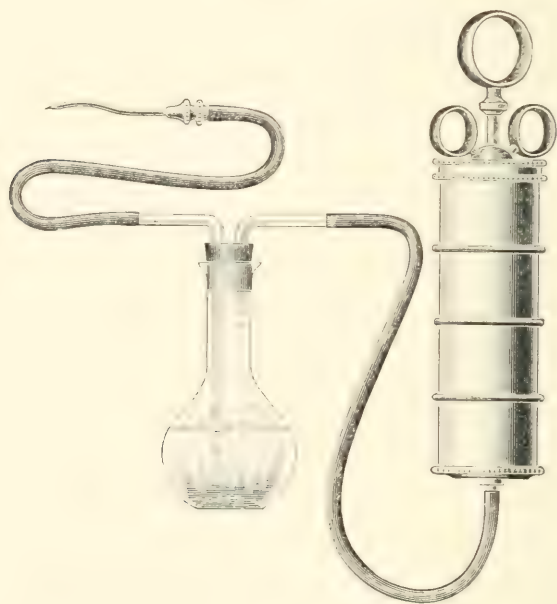
² Journal des Praticiens, May 11, 1901. Philadelphia Medical Journal, July 20, 1901.

³ British Medical Journal, November 2, 1901.

accounts of its success and of its failure we are struck with the fact that success lies chiefly with those who have had the greatest experience and possess the best facilities for a safe manipulation. It is, perhaps, opportune to suggest that there is a growing department of treatment, including intravenous injections and other methods, which calls for the intervention of an expert, the technical difficulties being too great for the average busy practitioner.

Considerable excitement was occasioned by the fatalities which occurred last year at Guy's Hospital. Of three patients injected with gelatin one recovered, but two others died with symptoms of tetanus.¹

FIG. 4.



In Germany, Freudweiler² has collected other fatal cases which resembled uræmia rather than tetanus. In connection with Guy's cases, Ernest W. H. Groves and Walter Broadbent³ both make the suggestion that the convulsive seizures might not have been due to tetanus, but rather to clotting in the small vessels of the spinal cord. Groves, in a recent contribution to the Obstetrical Society, has attributed the convulsions of his cases of eclampsia to increased coagulability of the blood and to multiple thrombi in the brain, kidneys, liver, and other organs; and there is cogency in Broadbent's remark that the interval

¹ British Medical Journal, September 7, 1901, p. 638.

² Centralblatt f. klin. Med., July 7, 1900.

³ British Medical Journal, September 14, 1901.

after the injection of gelatin was unusually short for the action of the tetanus bacillus.

While these disastrous experiences are a warning to the uninitiated, there is hope for the future treatment of aneurism and of hemorrhagic affections in the favorable reports recorded during the last twelve months. Lancereaux and Paulesco¹ publish 4 cases in which the treatment was followed by marked amelioration. They insist that the minimum dose of gelatin should be about 5 grammes dissolved in a 7 per cent. solution of sodium chloride, and that the many failures which have been reported have been due to insufficient strength and bulk and to an insufficient number of the injections. (Fig. 4.)

For the administration of the injection the simple apparatus used by Robert Maguire, of London, and depicted in the *Lancet* of November 9, 1901, will probably be found the most convenient. The powerful brass syringe is of a sufficient capacity to deliver the entire charge of 100 c.cm. of sterilized 2 per cent. gelatin solution rapidly at one stroke of the piston. Maguire administers the injection deeply into the buttock, the skin having been frozen with ethyl chloride spray. The previously sterilized gelatin solution is kept aseptic, the distal glass tube being sealed and the proximal or short tube plugged with cotton-wool until the moment of the operation, when the plug is removed.

A case of aneurism of the arch was cured by Z. A. Presman.²

B. G. A. Moynihan³ failed in an aneurism of the innominate, which, however, consolidated after ligature; but he reports good results in hæmophilia, post-operative hemorrhage from the kidney, and chronic jaundice before undertaking operation. In spite of the acute pain and of the pyrexia lasting two days, which follow the bulky six-ounce injections, he is of opinion that the method is a means of increasing the coagulability of the blood, which will not improbably be of great value in many surgical conditions, in cases of hæmophilia and in cases of chronic jaundice.

Sorgo⁴ concludes from his researches in animals that gelatin does not increase the coagulability of the blood and that the mechanism of its beneficial influence in aneurism is still unknown. He has analyzed the records of 48 cases of saccular aneurism; 13 were consolidated, while of 16 cases of diffuse dilatation none was cured. He himself has employed a stronger solution (from 3 to 5 per cent.) without any evil consequences.

The hæmostatic value of gelatin injections has been tested by H.

¹ Bull. de l'Acad. de Méd., July 16, 1901.

² Medicinskoie Obosrenie, August, 1901. Philadelphia Medical Journal, March 15, 1901.

³ British Medical Journal, September 14, 1901.

⁴ Zeitschrift f. klin. Méd., Band xlii., Heft 1 and 2.

Gebele¹ and by Grunow.² The latter, speaking from an experience of 27 cases, recommends the persevering employment of the method in all internal hemorrhages, though it may need to be supplemented by other hæmostatics. H. Gebele concludes from his experiments on rabbits that, as a tendency to increased coagulability does not manifest itself until after the loss of one-fifth to one-fourth of the total volume of the blood, the method does not appear to be available as a prophylactic.

As a local styptic Giordano³ uses a 10 per cent. solution (gelatin, 100 parts; salt, 7 parts; water, 1000 parts) and adds to it as an antiseptic 1 to 3000 perchloride of mercury solution.

The Hæmostatic Efficacy of Adrenal Extract in Hæmophilia seems to be supported by a well-authenticated instance narrated by D. McKenzie.⁴

The internal administration of powdered suprarenal capsule placed on the tongue (four powders daily) has proved successful in 45 previously unpublished cases, chiefly uterine, by Flörsheim.⁵ The effect is generally perceived in about ten minutes.

¹ Münchener med. Wochenschrift, June 11, 1901.

² Berl. klin. Wochenschrift, August 12, 1901. Philadelphia Medical Journal, November 16, 1901.

³ Gaz. degli Osped, July 14, 1901.

⁴ British Medical Journal, April 27, 1901.

⁵ Medical News, New York, January 4, 1902.

DERMATOLOGY AND SYPHILIS.

BY WILLIAM S. GOTTHEIL, M.D.

DERMATOLOGY.

Acne. This is by no means a trivial affection in its severe forms, and in young women may be quite a serious deformity. That the results of ordinary treatment are not infrequently unsatisfactory is evidenced by the numerous articles and suggestions that appear in the medical press. Bronson's article¹ is, therefore, timely, more especially as the methods that he recommends are in the main those that the dermatologist usually and successfully employs. He advocates a vigorous intrafollicular treatment; each inflammatory papule and pustule is to be opened, its contents expressed, and trichresol applied to the cavity by means of a tiny swab.

When there is much attendant rosacea, exfoliation must be effected; and for this purpose Bronson recommends 30 per cent. to 40 per cent. resorcin in gelanthum. This dries quickly, forming a transparent varnish that can be washed off with water, and does not cause too much inflammatory reaction; it is to be renewed daily for from four to five days until free exfoliation occurs. The treatment must often be repeated at intervals of a few weeks. The worst cases require electrolysis, a bluntly rounded needle being used to prevent the point engaging in and piercing the side of the follicle, and thus misdirecting the current. The method is essentially the same as that employed for the electrolytic destruction of hairs; the results are good, but the time required for the destruction of sebaceous glands at each insertion is twice that needed for the hair papillæ. Electrolysis and exfoliation may be employed alternately.

All the methods employed are practically variations of the above. Thus Charneuil² uses the following:

R.—Sulphur præcipitatæ	25 grammes.
Alcohol (camphorated)	60 “
Aquæ rosæ	200 “
Aquæ dest.	250 “ —M.

Sig.—To be applied with a brush, after shaking, at night, and allowed to remain on until morning.

¹ Journal of Cutaneous and Genito-urinary Diseases, October, 1901.

² International Medical Magazine, November, 1901.

I myself prefer an ointment containing green soap, thus : sulphur or resorcin, three parts ; green soap and vaseline, of each two parts. This is applied for a time dependent upon the dermal reaction, usually for several hours, or three successive evenings, or for three successive nights. When sufficient inflammatory reaction is obtained its use is stopped and any simple dusting powder applied.

In any case local treatment is of the first importance, and skins that are as rough as nutmeg-graters and thickly sown with inflammatory pustules can be smoothed down and rendered normal by a judicious employment of treatment consisting of local applications to the affected follicles, exfoliation and electrolysis. Internal treatment of the various affections of the generative or the gastro-intestinal tract, upon which the condition is supposed to be dependent, is only of very secondary importance, in my opinion. Of course, abnormalities should be remedied, as far as possible ; but the malady is probably due to recurrent local infection of the follicles with micro-organisms. In this connection it may be stated that there has been no confirmation during the year of the claim of Unna and Hodara to have isolated the micro-organic cause of the affection.¹

Actinothrapy. It is desirable to employ distinctive terms for the two chief methods of applying light rays to the treatment of disease, more especially of the skin. Phototherapy may be reserved as a general designation for the light treatment ; radiotherapy is the most suitable name for the treatment by the Röntgen or X-rays ; while actinothrapy is the treatment by ordinary visible light and the waves adjacent to it at the violet end of the spectrum, introduced by Finsen. Much work has been done in both departments during the past year, and with results that, to say the least, are extremely encouraging.

The question of the penetration of the deeper tissues of the body by means of concentrated light is a preliminary to its application to the deeper-seated dermatoses and affections of the internal organs. I called attention to its possibilities last summer.² More recently I detailed a series of experiments made in conjunction with Dr. Milton W. Franklin, of New York,³ in which photographic prints were made after passing the electric light through the entire thickness of the human body. The conclusions from these experiments were as follows :

1. Light in proper concentration from a source of sufficient actinic power can be made to penetrate the entire thickness of the human body, including both surfaces of the skin ; hence, all the internal organs are accessible to its influence.

2. Since no portion of the interior of the body can be more than half the thickness of the frame from a cutaneous surface, and most of the

¹ PROGRESSIVE MEDICINE, September, 1901.

² The Medical News, July 8, 1891.

³ Medical Record, April 18, 1902.

internal organs are much nearer, the time required for efficient actinic penetration to any depth is only a fraction of that required by the experiments; and conversely, if the time employed is equal, the chemotaxic effect will be far greater.

3. The admitted efficacy of actinic light in certain dermatoses of parasitic origin apparently opens a field for its employment in internal maladies, especially in those of tubercular nature.

As regards the experiments themselves, I need only say here that the time required to influence a photographic plate varied from ten minutes to half an hour, in accordance with the thickness of the tissues through which the rays had to pass; the longer periods were for the chest and back. Freund¹ has done some exact experimentation to determine the penetrability of the epidermis itself to the various elements of the spectrum; and he finds that about one-third of the ultra violet, up to the cadmium line, will go through tissue taken from pemphigus blebs and burns.

The apparatus employed by Finsen for actinotherapy is cumbersome and expensive, and is suited only for institutions where large numbers of patients are treated. Accounts of several contrivances of a more practical kind have been published during the year, notably that of Gaston and Lortet.² Leredde has used this apparatus for several months, and claims that it is very excellent. A ten or twelve ampère arc only, however, is employed; and the surface that can be treated is very small. It seems entirely inapplicable to the treatment of the deeper tissues, and bids fair to be useful, if at all, only for the most superficial dermatoses. A notable improvement in the larger machines seems to be the introduction, by Bang, of hollow iron electrodes with a stream of water circulating in them. Their originator, and Finsen and Strebel, each have an article on the subject,³ and claim that they produce the ultra-violet rays in great abundance, and have a most powerful bactericidal action, killing superficial staphylococcus cultures in a few seconds.

No details of the construction of these electrodes have appeared, however, and an inquiry of Bang himself elicited the answer that the matter was still in the experimental stage only, and that no definite information was ready. At the present time the actinolite made here is still the most practical and powerful apparatus for actinotherapeusis.

The practical value of the treatment has been discussed at several medical meetings. At the Sixty-third *Versammlung Deutscher Naturforscher und Aerzte*, at Hamburg, Forehammer⁴ extolled it highly,

¹ *Dermatologisches Centralblatt*, January, 1902.

² *Annales de Dermatologie et de Syphiligraphie*, April, 1901.

³ *Deutsche medicinische Wochenschrift*, January 9 and 16, 1902.

⁴ *Dermatologisches Centralblatt*, February, 1902.

and showed its excellent cosmetic effects by means of projection slides. At the British Medical Association meeting, at Cheltenham, in August, Malcolm Morris claimed that its advantages were the permanency of its results, the absence of pain, and the good cicatrices that ensued; and Blacker and Sequiera agreed with him.¹

Leredde² regards the actinotherapeutic action of the violet rays far preferable to those of the Röntgen apparatus; there being none of the irregular and frequently treacherous action that so often renders these latter dangerous.

This is a point that deserves especial attention. I am convinced that the accidents of radiotherapy are by no means invariably reported; and I have had occasion only recently to hear from a medical friend of a case in which amputation of the thigh had finally to be performed for a most obstinate radiodermatitis involving the deepest tissues, and resulting from a single rather prolonged exposure to the rays months before. There is yet to be reported the first untoward result from the use of the ultra-violet ray, which, it must not be forgotten, has been in use much longer than the X-ray.

I can only mention very briefly the various indications for the employment of actinotherapy. In a paper read before the Georgia State Medical Society, April 18, 1902, I recorded two cases of lupus vulgaris, two of parasitic sycosis, one of localized sarcoma cutis, one of lichen planus, two of alopecia areata, and one each of mycotic eczema, acne atrophica, and ulcerative tertiary syphiloderm, in which the results were very satisfactory indeed. On the other hand there were no results in several cases of keloid and suppurative folliculitis of the scalp and one of idiopathic atrophy of the skin. Ravogli³ reports very favorably of the treatment in a case of tubercular ulceration of the back, one of lupus of the ear and eyelid, and one of lupus erythematosus of nine years' standing. Jersild has treated six cases of alopecia areata, getting a new growth of fine hair in some cases in ten days, and a return to the normal in two months. Ernst Hellmer⁴ notes excellent results in an obstinate case of pustulo-crustaceous eczema of two months' standing after seven sessions; and A. B. Minin⁵ reports the same in chronic eczema and severe contusions. Lindeman,⁶ Schüler,⁷ and C. Ullmann⁸

¹ *Annales de Dermatologie et de Syphiligraphie*, July and August, 1901.

² *Presse Médicale*, September 7, 1901.

³ *Cincinnati Lancet-Clinic*, November 9, 1901.

⁴ *Blätter für klinische Hydrotherapie*, 1901, No. 7.

⁵ *Medizinische Wochen.*, 1902, No. 12.

⁶ *Deutsche Medicinal-Zeitung*, 1901, No. 44.

⁷ *Monatsschrift für orthopädische Chirurgie und physiologische Heilmethoden*, March, 1901.

⁸ *Monatshefte für praktische Dermatologie*, August 15, 1901.

record successes in similar cases. Finsen¹ reports 31 cases of lupus erythematosus, 10 apparently cured; 29 alopecia areatas, 22 cured; acne vulgaris and acne rosacea 15, 4 cured, 5 improved; naevus vasculosus, 10, 1 cured; tuberculosis cutis 7, 2 cured; trichophytosis 6, 2 cured; with negative results in favus, seborrhœa capitis, keloid, etc.

Actinotherapy has not as yet been largely employed in cancer; the dermal forms of the disease, however, would seem to be especially suited for its employment, more especially in locations upon the face, where caustic or operative treatment would inevitably lead to disfiguring scars. Finsen has treated 17 cases with 8 cures to date; Sjögren² 5 out of 10 canceroids, the other 5 being still under treatment.

In lupus, of course, the method is well established, and it is needless to recount the published cases. In other dermatoses it is still, as was the case last year, under trial. The apparatus at our disposal are still not perfected, and the number of cases are yet too few to permit of definite judgment. But the indications are that it will form an important therapeutic procedure in dermatology; and its applicability to internal affections, as shown by the proofs of its penetrative power mentioned above, opens up a new and promising field.

Actinomycosis. Primary actinomycosis of the skin is very rare indeed; only about 15 cases are on record up to date, and with the exceptions of 1 of Kaposi upon the thorax, 1 of Parscht upon the thigh, and that of Nocard and Lucet upon the hip, they have all been upon the uncovered portions of the body. Koppstein³ reports a case in a female farm laborer, who cut her hand peeling potatoes, and then assisted at binding up the corn. Some weeks later a painless swelling occurred at the site of the lesion, which grew to be nut-sized, and looked like a fibroma. The skin was adherent, but unchanged, and there was no glandular involvement. Operation showed the tumor to be composed of tough fibrous tissue, with a few drops of purulent material in its centre. The pus contained typical actino granules, and some were found in the connective tissue. The wound healed in a week. Attention is drawn to the similarity of these cases to tuberculosis, lupus, and syphilis of the skin, which has undoubtedly caused errors of diagnosis.

Vander Veer and Etting's case⁴ evidently started in the abdomen, appearing as a flat tumor in the umbilical region, apparently springing from the right iliac crest. There was also a subcutaneous abscess which was not opened for fear of infecting the peritoneum, but which

¹ Mittheilungen aus Finsen's Medicinske Lysinstitut, for 1900 and 1901.

² Monatshefte für praktische Dermatologie, November 15, 1901.

³ British Journal of Dermatology, May, 1901.

⁴ Medical Standard, February, 1902.

ruptured spontaneously, discharging a creamy, flaky matter. In this the fungus was found, the previous diagnosis being intestinal sarcoma. Improvement and cure took place under the iodide of potash. This is regarded by many authorities as a specific in the disease, and is undoubtedly, as Bodin¹ admits, useful in many cases; but it is rare to have a cure effected without surgical intervention.

Adiposa Dolorosa or Dercum's Disease. A case of this rare affection is reported by Andrea Gindice² in the person of a female, aged forty-four years. After a period of pain in the sciatic nerves, the left buttock began to enlarge, until it was much larger than the right; the right became larger until both were equal. The fat then spread over the whole body, leaving the hands and feet partly free. The pain increased *pari passu* with the fat; the hair fell out; motion was interfered with, so that the gait became like that of osteomalacia; the muscular power was lowered; but there were no mental changes. Gindice ascribes the disease to thyroid atrophy; and the administration of the gland not only arrested the progress of the disease, but effected a marked improvement.

Adiposa dolorosa usually occurs in females between the ages of forty and sixty years who are neuropathic or alcoholic. It begins with the appearance of fatty nodules, at first circumscribed, but later becoming diffuse and confluent, or even pendulous; they are painful spontaneously and on pressure. Other symptoms that have been noted are diminution of cutaneous sensibility, paræsthesiæ, headache, trophic disturbances, pigmentations, muscular atrophies, and lowered mentality. The hands and feet seem to have escaped in all cases.

Alopecia. Two unusual cases of alopecia are recorded during the year. Bayet³ describes that of a young laborer of decided neuropathic tendencies, who received a blow on the face, and three weeks later his hair fell out *en masse* over a large part of his head. For six months later the proximal end of every hair that remained was found degenerated, much diminished in diameter, and without any trace of pigment. New hair grew continuously, but all of the same character. Afterward normal hair appeared. The trauma that he sustained must have affected the nutrition of the hair during that entire period. Clarke's case⁴ is more remarkable, and is even unique. The patient was a man, aged eighty-six years, whose health had been perfect save for hæmoptyses, unaccompanied by fever, and of unknown origin, from which he had suffered for years at intervals. One year before the occurrence of

¹ La Pratique Dermatologique, Besnier, Brocq, and Jacquet, 1901.

² La Presse Médicale, 1901, No. 12.

³ Dermatologische Zeitschrift, August, 1901.

⁴ Medical Standard, October, 1901.

the alopecia his hemorrhages ceased. He then had a beard that reached down to his breast.

One day, being in his usual good health, he found it somewhat tangled, and straightened it out with his hand. His wife asked him at dinner what was the matter with his beard, and he answered nothing. He put up his hand, grasped his beard, and the whole came away. Going to the mirror, he found the beard all gone save for a few tufts upon the chin and the sides of his cheeks. The scalp hair was so loose that rubbing it with his hands soon took it all off. In a few days all the hair had disappeared from all portions of his body. Clarke ventures no explanation of the origin of the alopecia; but the case is probably one of neurotic alopecia areata, remarkable for its extent and the suddenness of its onset.

The peculiar alopecia that sometimes occurs after the internal administration of thallium has been investigated by Bettman.¹ He administered the acetate of the drug to rabbits in milligramme doses subcutaneously and by intravenous injection; but it was so rapidly fatal that he observed incipient alopecia in one case only. He then gave very minute doses for a long time subcutaneously or intraperitoneally to rabbits, mice, rats, guinea-pigs, cats, dogs, etc., as well as to some chickens and pigeons. In no case did alopecia occur. Later he succeeded in producing it by administering the drug by the mouth to white mice, and showed photographs of these animals at the last Dermatological Congress. He also fed rabbits with food impregnated with thallium acetate 1 to 20,000, and obtained a fairly general development of alopecia. According to these experiments human beings, rabbits, and white mice are the only creatures susceptible to this action of the drug; but its action is always entirely uncertain. The experiments, as a whole, were not satisfactory, inasmuch as they gave no data for estimating the danger of alopecia occurring during the administration of the drug; and phthisical patients, to whom it is mostly given, may lose their hair in consequence of general malnutrition, or may be the occasional victims of alopecia from other causes.

In this connection the views advocated by Parker² may be mentioned. He believes the alopecias to be due to auto-intoxication from the lungs, owing to decomposition of the organic material normally present there. Diaphragmatic male breathing favors the process; costo-superior female breathing does not; hence, males are much more frequently affected. In three females with alopecia Parker found that it had followed pleurisy or pneumonia, with subsequent impairment of breathing. Dogs and pigeons lost their hair and feathers after water into which

¹ Dermatologisches Centralblatt, October, 1901.

² Medical Record, July 13, 1901.

air had been expired was injected into them. He believes that a specific substance is formed in the lungs under certain circumstances which interferes with hair growth, and he calls this provisionally trichotoxicon. Criticism of these views is unnecessary, since as yet they have not been substantiated by further investigations.

Behrmann¹ holds that the various forms of baldness known as alopecia prematura, A. seborrhœica, A. pityrodes, A. furfuracea, etc., are due to faulty diet; too much carbohydrates and alcohol, and too little sulphur for the hairs. Hence, he advocates the internal and external employment of sulphur in the treatment of the condition.

Leaving aside the vexed question of its etiology, there can be no doubt that sulphur is a very valuable agent in the local treatment of ordinary baldness. Its action may be as Behrmann believes; but it is much more probable that it is due to its influence upon the seborrhœa which is at the bottom of the majority of cases. The most important new suggestion as to its treatment has been given by Balzer,² who uses daily frictions of 30 per cent. lactic acid until the skin becomes inflamed. Treatment is then temporarily suspended, and renewed when the condition of the skin warrants it. He claims to obtain a new growth of hair in three or four weeks. This is important if confirmed; but I am afraid that we are almost justified in saying that the crop of remedies for baldness exceeds that of the scalps re-covered with hair by their means. It is worth trying, however, in otherwise hopeless cases.

ALOPECIA AREATA. I cannot say that the results from another year's work upon this subject have been very great. Judging by the reports the malady seems to be on the increase; Ledermann³ and others were very positive upon this point at the Berlin Dermatological Society meeting of June 11th. Norman Walker and Marshall Rockwell⁴ found 63 cases in 4000 cases of skin disease at the Edinburgh Royal Infirmary. They believe that the nervous element in the disease is greatly overestimated in importance, most cases being due to an organism, the *S. epidermidis albus* of Welch, which they have cultivated on Sabouraud's medium. Poggi⁵ found it beginning in the beard in 9 cases; he also concludes that it is usually parasitic, for several members of one family may be affected; there are no ascertainable general hereditary or occupation causes; it spreads without any regard to symmetry, relapses frequently, and responds well to local treatment. Sabouraud⁶ clearly

¹ Monatshefte für praktische Dermatologie, 1901, vol. xxxii.

² Cincinnati Lancet-Clinic, June 28, 1901.

³ Dermatologische Zeitschrift, November, 1901.

⁴ Scottish Medical and Surgical Journal, July, 1901.

⁵ Monatshefte für praktische Dermatologie, October 15, 1901.

⁶ Ibid., May 1, 1901.

differentiates two varieties of the malady; and my own experience is very decidedly in agreement with him. The first is an alopecia areata that usually begins in late childhood, appears usually upon the back of the head, spreads centrifugally, grows very slowly, and often heals spontaneously at puberty. This is non-contagious, and heredity, nervous influences, etc., may be factors in its etiology. It corresponds very closely to the ophiasis of Celsus. The other form is the seborrhoeal one of Bateman. It usually occurs in middle age as isolated round spots scattered over the entire head, and is certainly contagious. Fat masses can be pressed out of the hair follicles of the bald spots; and Sabouraud claims that these always contain the specific acne microbe of Unna and Hodara. On the other hand, Jacquet¹ has made careful examination of the blood and urine in 59 cases, and has found that the maximum disturbances in these fluids generally corresponds to the maximum disturbances of hair-growth. There was marked hyperchloriduria and hyperchloridæmia. The patients, Jacquet believes, suffer from actual dechloridation; and the hair affection is a local trophic disturbance engrafted upon a general affection; it is, therefore, a mere surface episode in a profound dystrophy.

Undoubtedly, attention has been directed entirely too greatly to the very striking symptom of loss of hair in localized areas, to the neglect of deeper seated and less evident conditions. Most symptoms occur in a number of affections; and it may well be that circumscribed bald patches may be due to a number of external and internal causes. Even in the present very imperfect state of our knowledge of the subject it is safe to say that the symptom of alopecia areata occurs in two distinct classes of affections—first in a localized, benign disease, that tends to spontaneous cure, and, second, as a general, more malignant affection of all the hairy surfaces, tending to end in permanent baldness. Some of these cases with alopecia areata are undoubtedly of neurotic origin and non-contagious; others are contagious, and probably parasitic. We are not, however, in a position to state the relationship between the different clinical forms and the two classes. That must await the investigation of the more intimate nature of the affections in which the symptom occurs.

Therapeutically the only novelty is the treatment of alopecia areata by the various forms of light. Mention has already been made under actinotherapy of the results obtained from the ultra-violet ray by Jersild, Finsen, and others. The X-ray has been employed by Holzknecht,² who showed 3 cases in various stages of cure at the

¹ *Annales de Dermatologie*, March, 1901.

² *Archiv für Dermatologie und Syphilis*, July, 1901.

Vienna Dermatological Society on February 20th. After four exposures in each case there occurred defluvium of all the hair. Six weeks later hair began to grow on the alopecic areas, while the healthy "epilated" hairs only began to come back three months later. Holz knecht very properly recommends the treatment to be applied to the affected areas only, the healthy scalp being protected; and Lang pointed out that alopecia areata sometimes gets well spontaneously. Radiotherapy has also been employed by some other experimenters.

Black Tongue. An instance of this rare affection in a male hemiplegic, aged eighty-four years, is reported by A. Lucet.¹ The round and oval bodies found by Raynaud were present in abundance; they were hyaline, of double contour, and their protoplasm contained a number of small refracting bodies. The best stain was found to be

FIG. 5.



Black tongue. (Author's case.)

carbol-thionin or Lugol's solution. Lucet calls them *saccharomyces linguae pilosae*; he cultivated them on glucose and levulose media, getting a mycelium growth also. Tincture of iodine stopped the growth, as did also picric acid; which facts will serve as indications for treatment. Inoculation upon rabbits' tongues were negative.

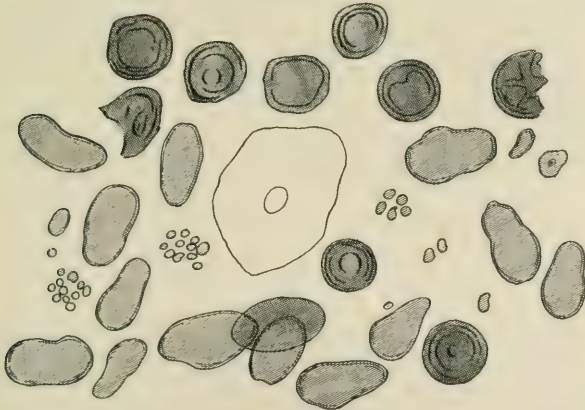
The filiform papillae were hypertrophied in this case, so that the designation of black hair tongue is not inappropriate. Solis-Cohen, Burn, Levisseur, Murdoch, Fereol, and others regard this as the essential element in the disease, claiming that the parasites are accidental; and Brosin in his elaborate monograph states that the affection is a simple hyperkeratosis of the lingual papillae, with pigmentation of the redundant epithelial cells. Later investigators, however, and especially Ciaglinski and Hewelke, and Sendziak, have described cases in which

¹ Archives de Parasitologie, May 20, 1901.

the papillary hypertrophy was entirely absent and in which the only visible symptom of the disease was the pigmentation. I have recorded a case of the kind in the *Archives of Pediatrics*, a picture of which, together with a drawing of the parasite found in the fresh scrapings, is here given. (Figs. 5 and 6.) It is evidently a variety of mucor. Treatment usually presents no difficulties at all; in my case the employment of a mouth-wash consisting of a saturated solution of the hypsulphite of soda removed the discoloration very rapidly.

Blastomycosis. This new disease was dealt with in detail in last year's review, and there is comparatively little fresh material to record. The affection remains American, no cases having as yet been published from European sources; and, strange to say, not a single one has yet been detected in New York. Hyde¹ has reported another Chicago case

FIG. 6.



Mucor from black tongue. (From drawing by the author.)

at the American Dermatological Association meeting in May, in which the legs and the backs of the hands were involved. Walker and Montgomery,² in an elaborate article, report further on a case previously recorded. There was systemic blastomycetic infection; the lungs were found filled with the organism. But the real cause of death was probably the secondary tuberculosis that was present. The account of this case will well repay careful study, and it is illustrated with excellent pictures of the disease and of the blastomyces in the tissues, some of which are reproduced here. (Figs. 7, 8, and 9.)

Claims are made by H. T. Ricketts³ that the disease in question is the same as the protozoic disease of Posadas, Wernicke, etc., and the

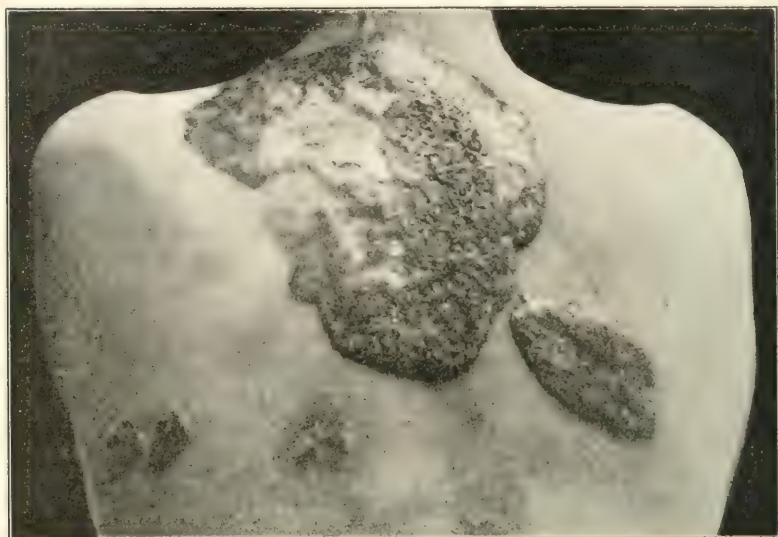
¹ *Dermatologische Zeitung*, October and November, 1901.

² *Journal of the American Medical Association*, April 5, 1902.

³ *Medical Research*, December, 1901.

parasite identical with Busse and Curtis' *saccharomyces hominis*. The organisms in many cases show minor variations, but they are

FIG. 7.



Blastomycosis. (Case of Walker and Montgomery.)

FIG. 8.



Blastomycosis. (Case of Walker and Montgomery.)

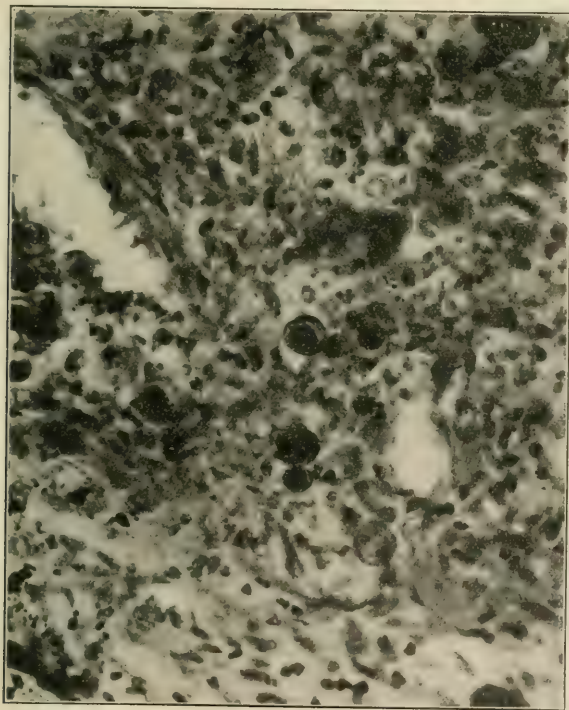
enough alike to justify their inclusion in the *oidium* genus. Ricketts believes them to be analogous to the organisms of *actinomycosis* and

trichophytosis. I cannot say that we are prepared as yet to accept all Ricketts' conclusions.

A. W. Brayton¹ adds another case to those he has already recorded, and goes very thoroughly into the semeiology and diagnosis of the affection. A brief résumé of his conclusions will be of interest. The affections with which blastomycosis is liable to be confounded are :

1. Tertiary Syphilitic Ulceration. This is to be distinguished by the clinical history, the presence of other syphilitic lesions, and the general

FIG. 9.



Blastomyces in the tissues. (Walker and Montgomery.)

lymphadenopathy. The reaction to iodide of potash is no aid, since that occurs in blastomycosis also.

2. Tuberculosis Cutis. This usually begins in childhood, rarely starts from multiple foci, and involves the tissues regardless of their anatomical structures. The resemblance of the two affections is very great, however ; Montgomery's case was photographed some years ago

¹ Indiana Medical Journal. Journal of the American Medical Association, February, 1902.

by Pusey as tuberculosis verrucosa cutis, and Duhring regarded Gilchrist's original case as a typical scrofuloderma.

3. Epithelioma. This is rare before the age of forty years; of the 17 blastomycosis cases that Hyde tabulates 8 were under that age, and Brayton's 2 first cases were aged fifty years and twenty years, respectively. There is marked glandular involvement, and blastomyces are not found in the secretion.

Blastomycosis itself is a slow creeping dermatitis, destroying tissue, healing, and scarring over; some cases have lasted ten or twenty years. No one has as yet seen a beginning case; but the patients' histories are that it begins as a furuncular eruption upon an exposed part of the body, followed by the appearance of small crateriform ulcerations which gradually increase in size and coalesce. The final diagnosis must be made with the aid of the microscope; and Brayton states that it is as easy as that of trichophytosis by examination of hair or scales. The yeast cells stand out as double-contoured, highly refracting bodies, almost always budding, and are readily found in the pus of the small abscesses. Tissue examinations are to be made as follows: A small fragment from the advancing margin of the disease is macerated in 20 per cent. to 30 per cent. potassic hydrate solution for from five to ten minutes, until blood cells and extraneous bacteria are destroyed. This does not affect the yeast plant. Treatment for a short time with ether is useful to remove oil drops, but this is not necessary in practised hands. The macerated fragment is then examined with the one-sixth to one-twelfth objective. Cultures are easily made on beer-wort gelatin, appearing as large white fluffy colonies, with clean cut margins. The organism will also grow on the ordinary Loeffler blood serum medium that is used for the diphtheria cultures.

Burns. Griffith¹ rightly criticises the routine methods of treatment, and advocates the view that they should be handled like any other wound. Oils are inevitably dirty and septic; antiseptic solutions, like bichloride, are irritant, or, like boric acid, weak and useless; while dusting powders act as foreign bodies. The principles upon which treatment should be based are the protection of the granulations that soon spring up, and the prevention of infection. The first pain of burns is due to the action of the heat upon the terminal nerve filaments; later on it is due to the irritation of adherent dressings, decomposing matter, etc. The treatment that Griffith advocates is to first cut away the clothing and remove all dead matter, puncture the blebs, and cleanse the entire surface with hydrogen peroxide solution in strengths of 6 to 1 to equal parts of water. When the foaming has

¹ Medical News, August 24, 1901.

entirely ceased, strips of sterile rubber gauze are carefully applied and overlapped, the healthy skin for an inch beyond the margins of the wound being included in the dressing. The whole is then covered with loose sterilized gauze and lightly bandaged. Splints may be employed for the limbs to immobilize the parts. The further treatment is that of an ordinary wound.

Loschzilow¹ also rejects the ordinary oils and salves, the unsatisfactory effects of which he has seen in many burns occurring in the factories that he attends. He has treated 200 cases with picric acid with excellent results, using loose gauze compresses soaked in a 1 to 5 per 1000 solution. The pain ceases rapidly, the wounds are disinfected, and poisoning does not occur. Thus in the case of a boy in whom almost one-fifth of the entire surface of the body had been burned with naphtha and fat, the pain was much less two hours after the application of the dressing. It was changed daily, and a good cure resulted in three months.

The method advocated by Griffith seems very excellent, and is in accord with ordinary surgical procedure. Picric acid has not been so favorably reported on during the past year as it has been previously; in a few cases in which I employed it the pain was great, and the staining of the dressings and tissues very objectionable.

Canities. A case of sudden blanching of the hair from fright is reported from Paris.² The subject was a brown-haired man, aged thirty years, who was informed one evening that he had lost 35,000 francs in Panama shares. Next morning the hair of his head, beard, and body was snow white.

The cause of whitening of the hair is still in dispute. Metschnikoff³ holds that the entrance of air into the shaft has nothing to do with it, that it is a direct pigment removal by pigmentophage cells from the medullary layer of the hair. Sudden emotions (as in the case above recorded) may, on rare occasions, stimulate them into action. The whitening of the hair after infectious diseases like typhoid is due to their stimulation by toxic substances. This is merely an extension of Metschnikoff's well-known general phagocytic theory, and does not appeal very strongly to me. Emotional and toxic disturbances may affect the nutrition of the hair bulbs just as they cause other trophic disturbances; and the intervention of a *deus ex machina* in the shape of special pigment-eating cells hardly seems necessary. It in no way explains the partial or complete falling of the hair that takes place under similar conditions, and is evidently closely related to its whiten-

¹ Monatshefte für praktische Dermatologie, September 1, 1901.

² Ibid., May, 1901.

³ Annales de l'Institut Pasteur, 1901, No. 15.

ing. Grief, worry, and overwork, as well as the toxins from the infectious diseases and inflammatory processes, cause both whitening and falling of the hair; one or other manifestations is usually predominant; but they often occur together. Some general deleterious influence upon the nutrition of the hair follicle is evidently present in these cases.

Carcinoma and Epithelioma. Cullingworth¹ reports a case of cancer occurring in a child five weeks old; the youngest hitherto noted being one by Kaulish at eighteen months. Details are not given, and I think it would require indubitable microscopical evidence before the record of such a case can be accepted without hesitation. Tertiary syphilis and lupus is not uncommonly diagnosed as cancer, even by those of considerable experience; and probably blastomycosis is the occasion of some similar mistakes.

But little that is new in the therapeutics of the disease has been published during the year, with the exception of the application of phototherapy. F. S. Dennis² takes the usual surgical stand-point as regards caustics; he admits that they may be employed with success in the superficial varieties, but claims that they are painful, not permanent, liable to cause extensive sloughing, and dangerous from secondary hemorrhage, sepsis, etc. Adamkiewicz³ records a case of cancer of the vagina and uterus which Albert, of Vienna, refused to operate on in 1900 as hopeless. Cancroin injections stopped the hemorrhage and pain; the patient, aged fifty-one years, has gained weight and does not complain. In May, 1901, there was still a large tumor present, but Adamkiewicz believes that it is composed of "dead cancer tissue" only. As in so many other cases, the remedy seems to give results chiefly in the hands of its originator.

Heidingsfeld,⁴ in the Section on Cutaneous Medicine at the American Medical Association meeting at St. Paul, and Robinson,⁵ at the New York State Medical Association meeting in New York, advocated the caustic and more especially the arsenical treatment; and I see no reason to change the opinion that I have repeatedly expressed, that cutaneous cancers in all accessible locations are far better treated by caustics than by cutting operations. Cases treated in that way have been for ten years and more without recurrence. Pain is moderate, and I have never seen either secondary hemorrhage or sepsis occur.

Radiotherapy has lately attracted a good deal of attention in the

¹ Cincinnati Lancet-Clinic, October, 1901.

² Journal of the American Medical Association, October 19, 1901.

³ Annales de Therapeutique Dermatologique et Syphiligraphique, 1901, No. 13.

⁴ Journal of the American Medical Association, July 13, 1901.

⁵ Medical News, October 26, 1901.

treatment of epithelioma. Thor Stenbeck¹ cured two cases of epithelioma nasi in elderly women; but he admits that sufficient time has not yet elapsed to decide as to the permanency of the result. F. H. Williams,² Rinehart,³ C. W. Allen,⁴ Kinnaid,⁵ Sjögren,⁶ Morton,⁷ and Pfahler⁸ are some of the writers who record good results. There are, nevertheless, some very pertinent criticisms to be made. In many cases the Röntgen ray was not the only therapeutic agent employed; curettage, methylene blue, etc., being also used. In the second place many of the cases have undoubtedly been such as could have been readily and successfully treated by the older methods, and at much less expense of time and money. Again, the time is still entirely too short to allow any decision as to permanency of cure to be made. Finally, the Röntgen ray treatment has dangers of its own, to which attention will be especially called in the section upon radiotherapy. Suffice it to say here that Lieberthal,⁹ of Chicago, reports a case of epithelioma developed upon the basis of a lupus vulgaris that had been treated with the X-rays; of course, this is not necessarily the result of the treatment, for Fordyce¹⁰ reports a similar case without such treatment, and J. C. Johnson¹¹ records two cases of precancerous keratosis in X-ray workers, one of whom was a surgeon.

It seems probable that the ultra-violet rays of the spectrum as employed by Finsen will be found useful in carcinoma and epithelioma. The light treatment, however, cannot be regarded as a general method, but should be reserved for inoperable or untreatable cases. We possess in the knife and caustics methods that are suitable for the vast majority of cases and that have stood the test of time.

Chancroid and Bubo. The chancroidal organism has been the subject of renewed investigation during the past year. Lenglet¹² showed the Société de Française de Dermatologie et de Syphiligraphie tube cultures of the Ducrey bacillus, with photographs and sections made from inoculation sores. A strange fact is that while the bacillus could always be detected readily enough in the primary sore, it could be cultivated only from the secondary inoculations. "Skin gelose," a humanized medium

¹ Monatshefte für praktische Dermatologie, May 1, 1901.

² Boston Medical and Surgical Journal, September 12, 1901.

³ Philadelphia Medical Journal, February 1, 1902.

⁴ Medical Record, January 5, 1902.

⁵ Louisville Journal of Medicine and Surgery, March, 1902.

⁶ Dermatologisches Centralblatt, February, 1902.

⁷ Journal of the American Medical Association, March 22, 1902.

⁸ Therapeutic Gazette, March 15, 1902.

⁹ Journal of the American Medical Association, May 25, 1901.

¹⁰ Monatshefte für praktische Dermatologie, May 1, 1901.

¹¹ Philadelphia Medical Journal, February 1, 1902.

¹² Annales de Dermatologie et de Syphiligraphie, March 1901.

made by treating bits of human skin with pepsin and pancreatin and fresh blood was the medium employed; abundant pure culture colonies of the Ducrey bacillus were obtained in forty-eight hours. Positive inoculation results were gotten in man from these cultures. Besançon, Griffon, and Le Sourd¹ employed "sang gelose," guinea-pig's blood mixed with gelose, and obtained typical colonies. Himmel² used the same medium, but states that the organism grows on ordinary serum agar also.

These facts are of importance, since the pathogenicity of the coccobacillus discovered by Unna and Ducrey is still doubted in some quarters, and the link that has been missing in its proof has been the impossibility of making cultures of the organisms. All these authorities obtained positive inoculation results with their cultures, no matter how far removed from the original sowing; for the germ does not seem to lose its virulence by cultivation.

Extra-genital chaneroid, while not especially rare, is uncommon in comparison with extra-genital chancre. Seldowitz³ reports finding three of these lesions in the rectal walls of a woman, aged thirty-two years. Her husband got a chaneroid extra-maritally, and infected his wife by anal coitus, which he thought safer under the circumstances.

The best method of destroying the chaneroidal virus has formed the subject of an extensive series of experiments by S. Giovannini.⁴ The first point to be decided was whether a wound infected with chaneroidal pus could be disinfected with the ordinary antiseptics, sublimate, chinisol, carbolic acid, permanganate of potash, hydrogen peroxide, lysol, nitrate of silver, formalin, soap and water, etc. Eighty-five superficial wounds infected with chaneroidal virus were treated with various chemical agents; thirty-four of these, or 40 per cent., did not become virulent. Hence, the possibility of the disinfection of a superficial chaneroidal lesion was proven. Of the remaining fifty-one wounds, twenty-three became virulent only on the sixth to the twelfth day; the development of the infection was postponed from one to seven days. Giovannini's more exact conclusions are important for the estimation of the value of various agents in the prevention and treatment of chaneroid. He found that infection was prevented by:

1. Sublimate 1 to 1000, cold, even when applied eight hours after infection for one minute; 1 to 2000 for two minutes, ten minutes post-infectum; 1 to 3000 or 4000 at three or five minutes after, and even 1 to 10,000 (hot) applied for five minutes half an hour after infection.

¹ Journal of Cutaneous and Genito-Urinary Diseases, March, 1901.

² Annales de l'Institut Pasteur, 1901, No. 15.

³ Vrach. Dermatologisches Centralblatt, June, 1901.

⁴ Archiv für Dermatologie und Syphilis, April, 1901.

2. Soap and water, ten to fifteen minutes post-infectum, used for ten to fifteen minutes.

3. Carbolic acid, 5 per cent., or potassium permanganate, 1 per cent., used for five minutes, ten minutes after infection.

4. Formalin, 5 per cent., or cyanide of mercury, 2 to 1000, used for fifteen minutes, ten minutes after infection.

5. One per cent. sublimate soap and water at 39° C. to 47° C. used for ten to fifteen minutes ten to thirty minutes after infection.

Infection was retarded by these same agents employed in greater dilution, or at a longer time after the inoculation, as also by various other disinfectants. The important point to be noted is that ordinary soap and water, used thoroughly a short time after the inoculation, was about as effective as the chemical disinfectants. Mechanical friction is undoubtedly a great factor. The experiments emphasize anew the fact of the prime importance of cleanliness in preventing and combating infections of this nature.

Both heat and cold in the treatment of chancroid has been the subject of elaborate report. Zydłowicz¹ has used no other than Audrey's method since Kroesing announced his results. Out of 26 private cases, 22 showed no complications, and all were cured without glandular supuration. The red-hot Paquelin cautery is held for a full minute 3 to 4 millimetres from the sore; this destroyed all the infectious elements. The neighboring tissue is injected with 2 per cent. cocaine solution, and the treatment is begun one or two minutes later, when there is complete anæsthesia. The wound is dressed afterward with boric acid, dermatol, or calomel. On the other hand, F. von Poor² sprays the sores with methyl or ethyl chloride, and finds the treatment most effective. Twenty-five cases thus treated healed in ten or twelve days like an aseptic wound, with no complications. The spray is to be used for a minute or two daily until suppuration sets in, then ordinary antiseptic dressings are to be employed.

The action of both methods of treatment is probably the same; the altered temperature either kills the bacillus, or their development is stopped by the hyperæmia that ensues. They can be recommended for trial in the place of the ordinary antiseptics or the mineral cauterants.

Colombini³ holds that the chancreoidal bubo is always caused by the Ducrey bacillus, though the organism may be dead in the pus, and that fluid be non-infectious. They are living in the walls of the abscess, however, and the pus therefore becomes virulent later. According to Griwzeu⁵ the best treatment is that of Somogyi, consisting of opening

¹ Dermatologisches Centralblatt, June, 1901.

² Journal of the American Medical Association, June 15, 1901.

³ Dermatologisches Centralblatt, February, 1902.

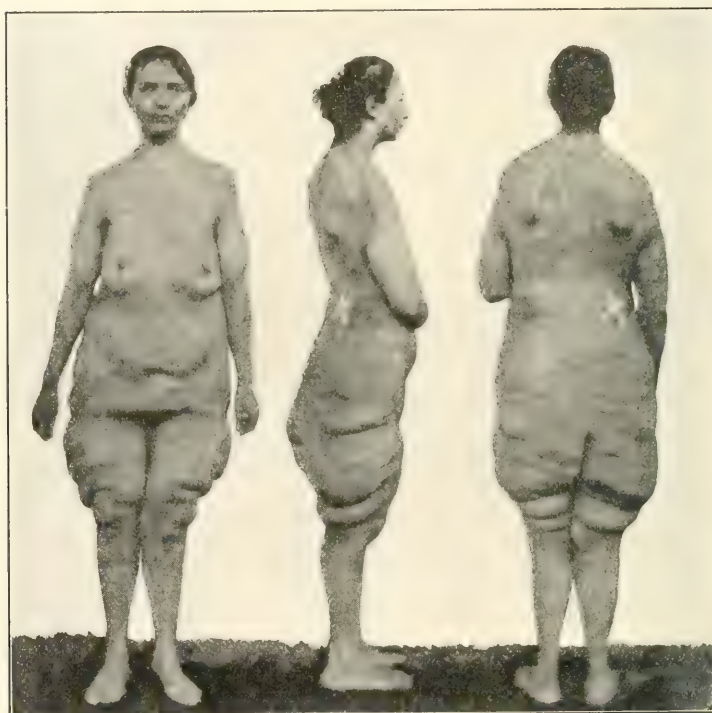
⁴ Ibid., June, 1901.

by a 5 millimetre incision, and the subsequent injection of a 10 per cent. iodoform-glycerin solution, followed by a pressure bandage for three days. He has treated 32 cases in this manner, the time required for healing being four to fifteen days. This is certainly less than is required under the ordinary open treatment.

Chelodermia. Under this designation von Ketly¹ has described and figured a peculiar and possibly unique case. (Fig. 10.)

It was in a female, aged thirty years, whose skin was normal until the eighteenth year. Then the skin of the gluteal regions began to

FIG. 10.



Chelodermia. (Von Ketly's case.)

become softer and pendulous, and that of the breasts, abdomen, back, etc., underwent the same change. The exposed parts of the body were not affected; there were no subjective symptoms, and no hereditary history. At the present time the skin of the trunk and thorax is soft and extensile, but normal; the mammae hang down upon the abdomen, and the integument of the thorax is thin, tense, and atrophic from the

¹ Archiv für Dermatologie und Syphilis, April, 1901.

weight of the pendulous masses lower down. The lumbar skin hangs like an empty sack over the thighs, and that of the glutei hangs down in large pendulous folds. Microscopic examination showed the upper epidermic layers and corium to be normal; all the changes were in the stratum reticulare and the subcutis. There was absence of the thick collagenous and elastic fibres, marked dilatation of the bloodvessels, and a peculiar, diffuse, cellular infiltration. There were freshly organized venous thrombi, and more or less cedema in the neighborhood of the vessels.

The cases apparently most nearly related to the above are those that have been described as *cutis laxa* by Williams, Ohmann-Dumesnil, Kopp, and others. But they differed from it in being a general congenital and not an acquired abnormality, and in the diminution of connective and increase of elastic fibres in the subcutis. The affection is apparently *sui generis*, and this, so far as I know, is the only case of the kind that has been recorded.

Dermatitis. MEDICINAL. Under this heading it is desirable to group a number of cases in which serious inflammation of the skin occurred in consequence of the external application of remedies usually regarded as harmless: Thus, Arthur Hall¹ says that *boric acid* in solution cannot be regarded as an innocent antiseptic, since he has seen many cases of erythema from its use, as well as from the employment of boric acid ointment. *Carbolic acid* has produced its usual crop of inflammations and gangrene; so that Swain² says that many surgeons have abandoned it entirely, save for instruments. It is especially dangerous in dilute solutions, which cause no pain; and the public should be warned of its dangers, since they have come to regard it as a harmless antiseptic which can be employed without medical supervision. Harrington has collected 132 cases of gangrene from these applications. The length of time during which it is employed and the thickness of the patient's epidermis seem to have more to do with its occurrence than the strength of the solution; in fact, strong solutions are less dangerous than weak ones, since they lead to the formation of a more or less impervious scab. The death of the tissues that occurs is due to direct chemical action, and tight bandaging or impervious dressings increase its deleterious effects. The best treatment in superficial cases is a lime-water dressing; deeper ones require surgical removal of the gangrenous tissues.

Mewborn³ records a case of acute dermatitis of the face, arms, and thighs from the use of a French hair dye containing *hydrochlorate of*

¹ British Medical Journal. Monatshefte für praktische Dermatologie, September 1, 1901.

² Bristol Medico-Chirurgical Journal. Therapeutic Gazette, July 15, 1901.

³ Journal of the American Medical Association, May 18, 1901.

paraphenylene. It is well known in Paris, where it has been found to occur in susceptible cases immediately after the first application, or, for unknown reasons, after the patient has been using the dressing for months. All hair dyes are dangerous to sensitive skins, but paraphenylene-diamin is the worst. Brocq and Laubry¹ call attention to the deep-seated and obstinate ulcerations that occur upon the hands of dyers. They begin with accidental lesions, cracks, or cuts, and are produced by the irritant solutions employed in their business. The external use of wine of opium was the cause of the dermatitis in a case of Bodin's.² The patient employed it locally for an earache following influenza, and in three hours it caused redness and swelling of the external auditory canal and the pinna and a dermatitis of the face and neck. Later he used the same remedy externally for an indefinite pain in the right iliac fossa, with the result of causing a bullous dermatitis of the skin of the abdomen and the hand with which he held the compress in place. The laudanum was examined and found normal. *Balsam of Peru* employed for scabies caused an intense ulcerative dermatitis in Hallopeau's³ experience. Jullien, Fournier, and Lafayneve stated that they had seen similar cases when he reported it at the French Dermatological Society. The drug is much counterfeited, and it is possible that the preparations used in these cases were impure. I habitually use balsam of Peru in scabies, and have yet to see the first case in which it did any harm.

Dermatitis due to the *primula obconica* has been reported in a large number of cases in Germany, where the shrub is a common window and household plant. Many otherwise unexplainable and obstinate cases of dermal inflammation have finally been traced to this source. Piza⁴ has found it to be caused by an irritant secretion in the glandular hairs of the plant. The reaction of various skins differs to it; most of them are not sensitive to it, even on contact; but some individuals cannot even come into the neighborhood of the plant without being affected. In this as in many other points its similarity to ivy-poisoning is very marked. I have had a personal experience with this, and for several years afterward would get an attack in the spring and in the fall, apparently when the wind laden with the noxious principle was blowing from a near-by country-place, where I contracted it. The attacks became less and less severe, however, and finally ceased.

EXFOLIATIVE DERMATITIS OF THE NEWBORN. Ravogli⁵ reports an instance of this rare affection. (Fig. 11.) The patient was a healthy,

¹ Archives de Dermatologie et de Syphiligraphie, April, 1901.

² Annales de Dermatologie et de Syphiligraphie, May, 1901.

³ Ibid.

⁴ Archiv für Dermatologie und Syphilis, December, 1901.

⁵ Medical Standard, September, 1901.

full-term child, in whom a blister appeared on the chest on the third day of life. The eruption spread rapidly over the body, and the infant died at the end of one week. The surface of the body looked as if it were scalded; the epidermis was detached in large shreds over all of it save the head; there were large bullæ filled with a milky, turbid serum. The skin deprived of its covering was of an intense brownish-red color, and pulpy in appearance, as if the mucous layer has been macerated. The temperature was subnormal (96° F.) and the pulse 140. This is the regular history of the disease in at least half the cases of this affection, concerning the exact nature of which there is great difference of opinion. Ritter, who first described it, considered it a pyæmic manifestation, and Winternitz succeeded in one case in demonstrating pus cocci in the blood. Kaposi, on the other hand, holds it to be merely an abnormal

FIG. 11.



Exfoliative dermatitis. (Ravogli's case.)

increase of the epidermic exfoliation that occurs in infants. The treatment consists in using every effort to sustain the patient's nutrition, together with the employment of lime water, mild ointments and pastes, etc., to the skin. In view of the subnormal temperature often present, wrapping in cotton or even the use of an incubator is indicated.

BULLOUS DERMATITIS as an independent affection is described by Trinkler.¹ He claims that these cases are not uncommon; they look like the blebs from burns, and are due to an infection with pus cocci through a prick or other minute lesion. I have reported a case that bears some similarity to this to the Section of Cutaneous Medicine of the American Medical Association, June, 1902. (Fig. 12.) The patient

¹ Monatshefte für praktische Dermatologie, October 15, 1901.

was an apparently healthy girl, aged five and one-half years, who had had the same trouble every fall for the last four years. The first attack was a mild one, a few medium sized blebs only appearing on the legs; it disappeared spontaneously after a few weeks. The next two were more severe, involved the trunk as well as the lower extremities, but running the same course. In the fourth, which I saw, there were some fifty lesions at different times, involving the trunk from the abdomen down. They came out during the course of ten weeks, from six to a dozen being usually present at once. There were absolutely no premonitory sensations when they appeared, there was no history of similar eruptions in the family, and there was no relationship to pressure or other injuries; so that the case cannot be classed as one of

FIG. 12.



Bullous dermatitis. (Author's case.)

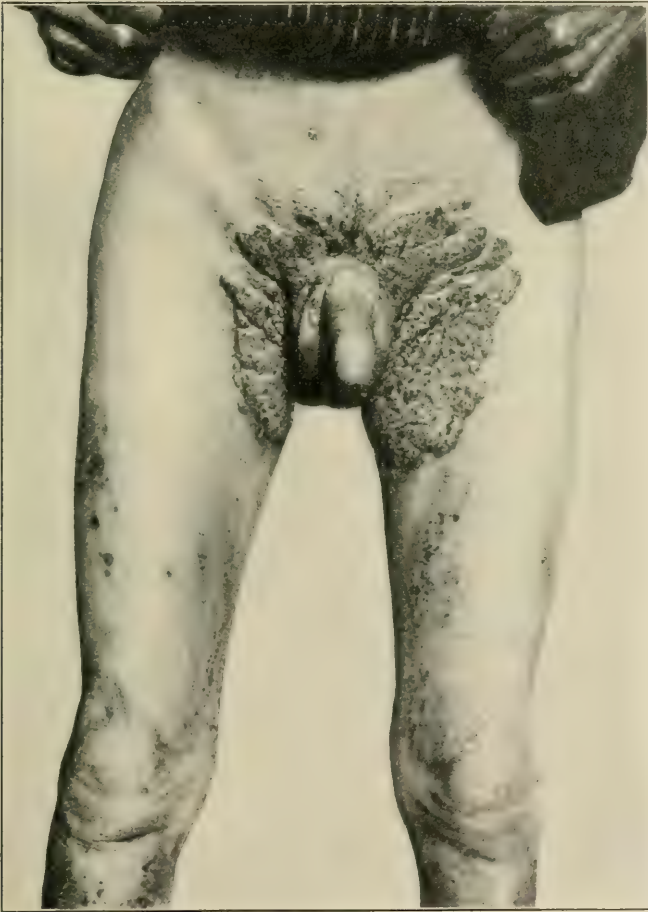
epidermolysis bullosa, a subject that was thoroughly discussed in last year's review. The lesions began as vesicles without a trace of inflammation around them, and some of them grew to the size of pigeon's eggs before they ruptured. After rupture the new epidermis rapidly became normal. There was no itching or urticarial lesions; there was no multiformity or involvement of the hands; and the general health was entirely unimpaired; hence, the affection could not be either a bullous urticaria, or an erythema multiforme, or a pemphigus. I do not agree with Trinkler that this affection is at all common, and I do not believe that its place in dermatological classification is yet fixed.

DERMATITIS VEGETANS. Hartzell¹ describes a case of this rare affection. (Fig. 13.) The patient was a man, aged fifty-seven years, in whom

¹ Journal of Cutaneous and Genito Urinary Diseases, October, 1901.

disease began twelve months before as an eruption of pea-sized pustules on the buttocks and scrotum, which, after a time, became confluent and crusted. It then extended to the groin and thighs, and later the lesions assumed a vegetating form. The author believes that the affection is a form of dermatitis herpetiformis. Two other cases, occurring in the

FIG. 13.



Dermatitis vegetans. (Hartzell's case.)

course of infantile eczema are those of G. W. Wende (Fig. 14), and H. K. Degroat.¹ The authors review twelve other cases that have been recorded, five in children and seven in adults, with eczema invariably present in those of the children, and twice in those of the adult series.

¹ Journal of Cutaneous and Genito-Urinary Diseases, February, 1902.

They are inclined to the opinion that the affection is owing to an infection engrafted upon the original dermal catarrh.

Eczema. Last year's review contained an account of the work done by a number of observers with regard to the cause of eczema, and I concluded that the evidence was not then sufficient to warrant us in regarding the affection as parasitic, save secondarily, and that the claims of various authorities to have discovered the etiological factor had not been substantiated. While the papers upon the subject have been less numerous this year, and there has been no general discussion, work of great importance has been done by Bender, Boeckhardt, and Gerlach,¹ which may lead me to modify the position that I then took.

FIG. 14.



Dermatitis vegetans. (Wende's case.)

These observers experimented with *staphylococcus pyogenes albus* and *aureus* cultures, and obtained definite results that differed as the micro-organisms themselves or their filtered toxins were employed. They used :

1. Agar culture containing the organisms, but little or none of the toxins.
2. Living *staphylococci* isolated from bouillon cultures.
3. Filtered bouillon cultures containing the toxins, but no cocci.
4. Unfiltered bouillon cultures containing cocci and toxins.

These were inoculated upon the observers' skins with the following

¹ Monatshefte für praktische Dermatologie, July 15, 1901.

results: Inoculation with No. 1 upon the irritated skin caused staphylococic impetigo, furuncle, or abscess, but never eczema. Inoculations with No. 2, free from toxins, gave impetigo staphylogenes, never eczema. Inoculations with the filtered toxins of No. 3 produced typical acute papular or vesicular eczema under moist warm dressings in from twenty-four to forty-eight hours; and this result occurred irrespective of preliminary irritation or disinfection. The primary vesicular lesion of such inoculations is sterile; but when its contents later become seropurulent, pure cultures of one or other staphylococcus is found. Number four produced eczema, showing that the presence of the cocci did not interfere with the result if the toxins were also present.

Inoculation with the cocci alone, therefore, was found to produce one or other form of pustular infection of the skin; while the presence of staphylo toxin caused eczema, probably on account of the absorption of the toxin by the derma. These researches add very greatly to the probability of eczema being parasitic in origin; and the fact that a micro-organism present everywhere produces toxins that can occasion the disease is an explanation of its commonness. The experiments await confirmation; but the reliability of the experimenters has caused the report to be accepted with much credence as an important contribution to our knowledge of the cause of the disease.

The other articles, such as that by Frédéric,¹ are not based upon accurate bacteriological experimentation, like that of Bender, Bockhart, and Gerlach. Like many other investigators, Frédéric found the primary eczema vesicle sterile; later lesions contained many microbes, especially the staphylococcus pyogenes aureus, and more rarely the albus.

THE TREATMENT OF ECZEMA at various ages forms the subject of a communication by Malcolm Morris.² In infancy the crusts should be gently cleaned off with water and a superfatted soap, and a 1 per cent. sulphur-benzoated lard ointment employed; the bowels should be carefully attended to, a little calomel occasionally for one or two nights being very useful. When the eczema is moist powders of boric acid, zinc oxide, and starch, best applied in a bag, are indicated; or the following: zinc, 7 drachms; lanolin, 1 drachm; olive oil and lime-water, each 1 ounce. This latter forms a useful cream, to which a little ichthyol may well be added. Thin strips of linen are soaked in it and applied, and then a gauze bandage put on. The dressing is to be renewed when it begins to dry. In the scaly stage of infantile eczema the white precipitate ointment should be used.

¹ Münchener medicinische Wochenschrift, 1901, No. 38.

² Lancet, May 4, 1901.

In older children the eczemas are usually of the seborrhœal type, and dry. Glycerin and water, 1 to 5, does very well; or the cream recommended above may be employed. In adults eczema of the limbs is usually dependent upon varicose veins and rest in bed, or the use of Unna's glyco-gelatin is indicated. The chronic forms require salicylic acid, resorcin, pyrogallie acid, and chrysarobin, in this order of desirability. It is well to begin with salicylic acid in small amounts, and, if it fails, to gradually add the other ingredients. For the aged Morris advocates opium to relieve the pain and irritability.

These are generally accepted principles of treatment of eczema. I would lay especial stress, however, on the importance of diet. The eczemas of infants are usually directly connected with gastro-intestinal disturbances; and even if we accept the parasitic theory of the origin of the disease, there can be no doubt that the skin is rendered more susceptible at least by the internal derangement. Regulation of the times of feeding and quantities and nature of the food is almost as important as the local measures that we employ. Even in adults regulation and change of diet is of great importance. Tea, coffee, beer, wine, spirits, sweets, fats, etc., should be eschewed; and in obstinate cases a modified or exclusive milk diet for a time will sometimes give results that are otherwise unattainable.

Erysipelas. This affection has been successfully treated with anti-streptococcic serum by MacMillan.¹ The case was a severe one, affecting the face and scalp, in which feeding and medication were almost impossible on account of the vomiting. Ten cubic centimetres were injected and repeated the next day; that night both the local lesion and the vomiting improved; the temperature sunk to 101.6° F., and the pulse to 110. On the following day the same dose was repeated; the vomiting ceased, food was taken, and the swelling and tenderness got less. That evening the temperature was 99° F., and the pulse 102; there ensued a rapid and complete recovery.

This is not the result reported by other observers from the use of the serum. My own experience with it has been entirely unfavorable; it seemed to do no harm in a number of cases in which I tried it, but it also did no good. Vidal,² in a paper read recently before the Society of Medicine of Paris, holds that there is no evidence to show that it influences the disease or its local complications at all. The mortality under ordinary treatment, according to Juhel Renoy and Roger, is 3.43 per cent. to 3.5 per cent.; under the antistreptococcic serum, according to Chantemesse, it is 3.4 per cent.

¹ Therapeutic Gazette, October 15, 1901.

² Cincinnati Lancet-Clinic, May 18, 1901.

G. Lenox Curtis¹ uses a poultice of sodium sulphate and distilled water, after carefully cleansing all grease from the parts affected. The poultice is covered with gauze or cheese-cloth, which should extend for a considerable distance beyond its margin; the whole is held in place with a bandage, and kept moist by the frequent application of iced water. Tubes to facilitate breathing may be employed in the mouth and nose. Curtis claims that in six to eight hours all the germs are destroyed, and that the results of the treatment are excellent.

The silver ointment of Cr  d   would seem to be especially applicable to an infectious disease of this nature, since the evidence is strong that it does exercise a systemic antiseptic effect. Max Stalber² reports good results from it. He rubs it over the affected area for twenty or thirty minutes, using from 40 to 50 grains for adults, and suitably smaller doses for children.

The usual amount of evidence of the efficacy of ichthyol in erysipelas has been presented during the year, and it remains the standard remedy for the disease. The silver ointment deserves a trial, especially where the ichthyol does not act satisfactorily; but I should advise its systemic as well as local use. Effective inunction cannot be made through the inflamed skin. A drachm or so should be thoroughly rubbed into the carefully cleansed skin of the thighs, arms, and loins once daily in exactly the same way as mercurial ointment is administered. There is no objection to the local use of a small amount of the ointment at the same time.

Favus. Bernhardt³ has made an elaborate study of this disease in Warsaw, where it is very common. This is of interest to us, since the disease is undoubtedly on the increase here, and most of our cases come from Russia. He found that no less than 3142 cases had been treated at the St. Lazarus Hospital of the city in question during the last nine years. There were many examples of the rarer forms, especially *f. furfuraceus* s. *squamosus*, where the characteristic crusts are not present, but the clinical picture is that of an ordinary pityriasis. I have seen such cases here, and have no doubt that they are usually unrecognized, and are largely responsible for the spread of the disease. He found *f. corporis* in 175 cases. Favus of the nails was rare, save from auto-inoculation when the scalp was affected; as a primary affection it was seen only among the hospital epilators. The parasitic growth appears as yellow spots under the nail. No case of favus of the mucous membranes was observed, and Kaposi's, in which the   sophagus and stomach were supposed to be involved, remains unique, though somewhat

¹ Medical Times and Register, June, 1901.

² Journal of the American Medical Association, May 4, 1901.

³ Wiener Klinik, Dermatologisches Centralblatt, February, 1902.

doubtful, as cultures were not made. Bernhardt holds that there is only one kind of favus parasite, and that the apparent varieties are due to differences of soil and temperature, etc. As the result of his immense experience he regards cure of the disease as possible, but never certain.

Solowjew¹ agrees with Demidow² in recommending formalin for the treatment of favus, and claims that by its means he cures his cases in two to three weeks, and that there are no relapses. Epilation is unnecessary. It is undoubtedly efficacious, as I can testify to; but the extraordinary rapidity with which Solowjew's 12 cases were cured gives rise to some doubt of the correctness of his diagnosis. Months are required for cure even in very limited scalp cases, and extensive ones may take years. In fact, my experience is that a large proportion of these cases are never cured at all. The class of patients usually affected pay comparatively little attention to the malady that does not interfere much with their occupation and does not affect their health. They go on year after year with the disease, submitting to some dispensary treatment when the crusting gets obnoxious, and ceasing when the condition of the scalp becomes fairly good again. In the course of years, after more or less of the hair has been permanently destroyed, and the normal scalp is largely replaced by cicatricial tissue, the parasitic growth ceases.

The question of epilation is always important, as it is in ringworm of the scalp. It is not so necessary here, but is a powerful aid to local treatment. In extensive cases, and more especially in public practice, it cannot be employed on account of the time that it takes and the pain that it occasions. Pospelow³ agrees with Solowjew,⁴ Besnier, and Petersen in regarding it as unnecessary. For the last two years his method has been the following: The crusts are removed with carbolized or formalized vaseline, the head washed with sublimate soap, and treated alternately with tincture of iodine and Wilkinson's ointment. Pospelow has also used tinctura veratri albi with good results similar to those from the application in ringworm and pityriasis versicolor.

Fibroma. Fibromata of the skin and mucous membranes are rare enough to merit record. L. J. Ladinski⁵ records a case of fibroma of the labium majus. (Fig. 15.) The patient was a woman, aged seventy-eight years, and the tumor had been growing for about a year. The only treatment for these growths is, of course, ablation.

Folliculitis. I called attention last year to the occurrence of folliculitis affecting the scalp, giving a picture of an extensive case. Balzer

¹ Dermatologisches Centralblatt, March, 1902.

² PROGRESSIVE MEDICINE, September, 1901.

³ Monatshefte für praktische Dermatologie, January, 1902.

⁴ Ibid.

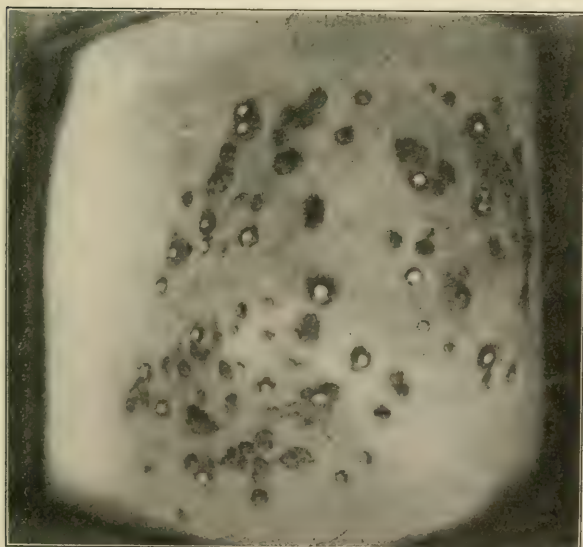
⁵ American Journal of Obstetrics, 1902, No. 1.

FIG. 15.



Fibroma of labium majus. (Ladinski's case.)

FIG. 16.



Folliculitis of the knee. (From model by the author.)

and Alquier¹ describe a somewhat similar one, which they believe to be an example of Bockhart's impetigo of the hairy scalp. Large areas were covered with pustules, drying up into crusts. The pus contained the staphylococcus aureus in pure culture. In their case, however, the hairs were entirely destroyed, and scarring resulted, and I should be inclined to classify it as a folliculitis decalvans of a not uncommon type.

At the Société Française de Dermatologie et de Syphiligraphie, Baudouin and Gaston² showed several cases of folliculitis and perfolliculitis of the pubic and crural regions. Some of them looked like ordinary sycosis, while others were apparently eczematous. An important point was that they always occurred in conjunction with urethral or vaginal discharges. Pus infection of the hair follicles is by no means confined to the beard and scalp. I have observed a marked case in a very hirsute individual, affecting the patellar region. (Fig. 16.)

Gangrene. A number of cases of gangrene of the skin from various causes have been recorded during the year. A. Veillon and J. Hallé³ report a rare case of *disseminated infantile gangrene* consecutive to measles, which ended fatally. The child was eighteen months old. Four days after the appearance of the exanthem, when it was beginning to fade, bullæ with a sanguinolent fluid appeared. These ruptured and were replaced by circumscribed ulcerations from 1 to 2 centimetres in size; the loss of tissue involved the entire skin; the lesions were crateriform and secreted a fœtid pus. One upon the neck was deep enough to expose the muscles. The temperature was 39° C.; there was dyspnoea, but nothing special audible on auscultation of the lungs. Diarrhoea set in; the ulcers slowly increased in size; and the infant finally died of exhaustion. The microscopic examination of the secretion from the ulcerations showed the presence of staphylococcus pyogenes aureus exclusively. Gangrenous processes are not extremely infrequent after measles; and the same is true of tubercular infection of the skin. Several cases are noted under "Tuberculosis;" the skin seems especially susceptible to microbic invasion after this particular exanthem.

Four cases of *gangrene of the skin* unconnected with exanthematic disease are noted by Bronson,⁴ Bowes,⁵ Richmond,⁶ and Hochsinger.⁷ In Bronson's case there appeared an extensive, greenish-black, leathery necrosis on the right cheek, neck, and ear of a child four days old. Similar

¹ Archiv für Dermatologie, December, 1901.

² Monatshefte für praktische Dermatologie, May 25, 1901.

³ Annales de Dermatologie et de Syphiligraphie, May, 1901.

⁴ Journal of Cutaneous and Genito-Urinary Diseases, December, 1901.

⁵ Monatshefte für praktische Dermatologie, February 15, 1902.

⁶ Ibid.

⁷ Centralblatt für Kinderheilkunde, June and July, 1901.

but smaller patches appeared in the right sternal region and upon the right thumb. The dead tissue was cast off, healthy granulation set in, and healing was complete in three weeks. As regards the etiology, Bronson believes that the case was probably one of spontaneous gangrene beginning in utero, not a pressure necrosis due to parturition. Bowes' case began on the seventeenth day of life with the appearance of vesicles upon the back, which soon became pustular, and then gangrenous. The lesions spread to the sacrum, thigh, and shoulder, and death occurred on the fifth day of the disease. There was no fever, and no history of injury or other cause for the process. In the case observed by Richmond a dark-red area appeared on the cerebellar region, and another at that of the seventh cervical vertebra. The birth had been natural. The gangrene spread, and death occurred on the eighth day of the disease. The affection was probably due to central causes, since there was marked strabismus.

Hochsinger's case was one in which a large patch of gangrene, resembling a rubber dress shield in size and location, developed under the arm of a healthy baby one week old. Death occurred on the fourteenth day. Hochsinger claims that only two other similar cases are recorded; but those above mentioned were reported in one year, and the affection is evidently not so uncommon as he supposes. He believes that in his case there was a thrombus of the thoracic artery; the axillary and radial pulses were intact; but no post-mortem was permitted.

All these cases are typical examples of single or multiple spontaneous gangrene. The etiology and pathology of the affection is as yet almost unknown. The treatment can be only symptomatic; Doutrelepon recommends the employment of compresses soaked in 1 : 1000 sublimate locally.

Gangrene from self-inflicted injuries in hysterical subjects is a fairly well-known manifestation of neurotic disease; yet the cases are rare enough to deserve record. Rybalkin¹ reports an unusual case. The patient was a girl, aged seventeen years, who had hyperæsthesia of the left side of the body, anæsthesia of the affected arm, and right ovaralgia. She was a silver-worker, having access to sulphuric acid, with which she burned her arm. Three weeks later, when the burn was healing, many foci of spreading gangrene appeared on the affected limb, and large areas of skin were lost before the process stopped. Rybalkin appears to think that the gangrene was spontaneous; but the probability of further self-inflicted injuries seems very great. The patient had probably learned how to get the maximum effect from the acid and how to hide the traces of its specific action.

¹ Dermatologisches Centralblatt, March, 1902.

An interesting case of *spontaneous gangrene* of the eyelid is recorded by Roger.¹ The patient was a healthy robust male, with no pathological antecedents. The affection began as a simple patch of inflammatory edema of the right lid, followed by fever for four days; the entire process ended in extrusion of the dead tissue and healing in twenty-one days. The eye itself was not involved. Only one similar case has been recorded. A large aerobic micrococcus was cultivated from the serum, which was pathogenic for rabbits and guinea-pigs, but harmless for rats.

The treatment of *diabetic gangrene* has been elaborated by Wolf.² He reviews 172 communications upon the subject. In non-inflammatory cases it is proper to await the formation of a line of demarcation; in inflammatory cases delay is dangerous. A close watch should be kept upon all premonitory symptoms, such as pain or formication, occurring in the limbs of diabetics. Care must be taken to avoid causing even the slightest lesion when cutting nails or corns; the greatest cleanliness of the feet must be insisted on, and the footwear should be easy and well fitted. Treatment by means of massage, hot baths, etc., should be instituted as soon as the very first symptoms of arterial change occur.

Hospital gangrene forms the subject of an important communication by Matzenauer.³ It still occurs occasionally, though antisepsis has rendered its manifestations lighter, and is most often seen in the genital and anal region. The ulcerations are peculiar in shape, form, and size, as well as in their rapid progression and the great destruction of tissue that they occasion. They have a dirty-gray, greenish or blackish covering, sometimes several centimetres thick; the odor is foul and penetrating; and marked fever accompanies the process. Matzenauer includes the ulcerations commonly called phagedenic and diphtheritic under this heading. Histologically he found an inflammatory process marked by the very early occurrence of coagulation necrosis. The disease is an infectious one, probably caused by an anaërobic bacillus; pure cultures that are beyond cavil have not yet been made, but the organism is constantly found in abundance in sections of the walls of the advancing ulcerations. It is a thin, straight bacillus, 3 to 4 microns long, and 0.3 to 0.4 microns broad, usually single, though sometimes two are found joined end to end. It is colorable by Gram's method. Its infectiousness is not so great as to require strict isolation of the patients. These results have been confirmed by Brebec,⁴ who found the same microbes in a case of nosocomial gangrene.

¹ Presse Médicale, September 21, 1901.

² Centralblatt für die Grenzgebiete der Medizin und Chirurgie, June, 1901.

³ Archiv für Dermatologie und Syphilis, February and March, 1901.

⁴ Monatshefte für praktische Dermatologie, February 15, 1902.

Hyperidrosis and Bromidrosis. Obstinate cases of localized hyperidrosis are very unsatisfactory to treat, and Kopilinski¹ advocates a very severe method which he claims has given him splendid results when all other means have failed. He cleanses the part and removes the hair, and then, without any anæsthesia, superficially cauterizes the area, using a flat thermocautery point. After the operation the part is dressed dry with bismuth or zinc. Hyperidrosis, it is true, is a purely neurotic affection, and this method has given good results in allied maladies, notably in pruritus; yet I should want to be very positive that nothing else would be effective before applying it.

F. R. Millard² has used yellow wash in cases of bromidrosis of the feet for the last twenty years, and claims that it has cured 50 per cent. of his cases. He makes it fresh by mixing corrosive sublimate 16 grains, lime water 4 ounces, and shaking. The feet are to be bathed and dried at night, the lotion applied on cloths, and allowed to dry in place. In the morning it is reapplied without bathing. This is done night and morning until the odor disappears; then nightly, and finally twice a week. I have had no experience with the method, but it seems worth trying in obstinate cases.

Hypertrichosis. A good deal of space was devoted to this subject in last year's review; brief mention of the new matter will, therefore, suffice. A French alienist has noted the tendency to excessive growth of hair in the insane, more especially in those suffering from senile dementia and general paralysis.³ He regards profuse hair-growth as an indication of physical degeneracy, and due probably to functional disturbances of the thyroid or ovary. This is distinctly at variance with ordinary experience, the general belief being that hirsuties is coincident with great physical strength as a rule. No such rule can be set up in the mental sphere, at all events; deficient development or early loss of hair being, if anything, certainly not significant of growth in that direction. On the other hand, local excessive hair-growths do occur in consequence of local lesions. Karwowski⁴ notes it as appearing over a joint affected with gonorrhœal arthritis. The entire lower arm from the elbow to the hand was involved, though the elbow was the only joint affected. Hypertrichosis on the skin of portions of the body that are kept immobilized or covered with dressings for long periods of time are quite common, of course; but in this case the new growth of hair was abundant far from the site of the inflammatory lesion or the dressing. Karwowski does not attempt to explain its occurrence; nor does Joseph, who recounts several similar

¹ Archiv für Dermatologie, December, 1901.

² Medical Standard, June, 1901.

³ Cincinnati Lancet-Clinic, December 14, 1901.

⁴ Monatshefte für praktische Dermatologie, September 1, 1901.

cases in his *Lehrbuch der Hautkrankheiten*. Leyden believes that these cases are compensatory; the muscular atrophy of the limb has a compensatory epidermoidal hypertrophy.

Weil¹ finds that intrafollicular electrolysis is too tedious, and proposes another plan. He pulls out the hairs, moistens the surface with a nitrate of silver or chromic-acid solution, and then applies the current to it. Under its influence the cations, silver, and chromin, pass into the follicles, combine with the chlorine of the tissues, and form an insoluble chloride of silver, which prevents the further growth of the hair follicle. He has experimented upon himself successfully; but I very much doubt whether patients would submit to the treatment, even if it is efficacious, which remains to be proved. The mere staining of the skin with these salts would prove an insuperable objection to the method, since the female face is the region where hirsuties has most commonly to be treated. Brayton² prefers pastes to the razor for palliative purposes; in which I quite agree with him, since they destroy the shaft of the hair for quite a distance down in the follicle, and are much easier to use. One of the best applications is "rusma," employed in Oriental harems to destroy the axillary and pubic hair. It is prepared by mixing yellow sulphite of arsenic with unslaked lime in the proportions of $\frac{1}{2}$ a grain to 8 grains, and boiling. The resultant paste is applied with a spatula, allowed to remain on the skin for ten minutes, until dry, and then scraped off with a dull knife. The skin is then washed, dried, and powdered. Calcium sulphhydrate (CaH_2S_2), made by passing sulphuretted hydrogen gas through a thick cream of slaked lime until no more is absorbed, is also good. It is antiseptic and alkaline, and a good skin bleach. Either of these applications requires to be reapplied every week or two.

Not much has been said during the year about the Röntgen treatment for hypertrichosis, since the falling of the hair is known to be only temporary in most cases, and the ever-present dangers of deeper and undesirable cauterizations are appreciated. Holzknecht³ claims to have gotten permanently good results from the method in elderly individuals with a close and heavy hair-growth. He admits that younger persons with a finer growth are not to be thus treated, since the atrophy of the skin counterbalances its advantages. Electrolysis remains the best and practically the only method for the permanent removal of superfluous hair; and properly managed is painless and effective. It has unfortunately fallen very largely into the hands of non-professional

¹ Bulletin d'Electrotherapie, April, 1901.

² Detroit Medical Journal, October, 1901.

³ Dermatologische Zeitschrift, October, 1902.

operators and charlatans, who have caused much damage by its use, and have brought it somewhat into disrepute.

Ichthyosis. There is but one paper to notice under this heading this year; but that is one of the greatest practical importance. In the 1901 review I noted that Don and Joseph reported remarkable improvement from the use of thyroid, but that Loewenbein, Lesser and Jarisch failed to obtain any results from it. I expressed myself as skeptical of the efficacy of anything but the ordinary palliative treatment. Bockhart¹ recounts the permanent cure of a case; and a report from so reliable a source deserves careful consideration. The remedy employed was the ordinary sulphur ointment; the essential features of the treatment being the care with which it was employed, and the extremely long time that it was persisted in. Treatment was begun at the age of eight years; it was kept up without intermission for three years, at the end of which time it was suspended, as the patient seemed cured. In three months, however, there was a relapse, treatment was then resumed for three years more, when the patient was again discharged cured. Six more years have now elapsed, and the patient has had no return of the affection.

The course was as follows: A warm water and soap bath was given every morning, and then a 5 per cent. sulphur ointment was thoroughly rubbed and massaged into the entire skin; the sulphur application was repeated at noon and at night. Cod-liver oil was given internally during the entire course. Of course, the patient smelled badly of sulphur, and could not go to school; she was therefore educated at home.

It is obvious that a treatment of this kind is not suited for the poor and careless patients of our public medical institutions; it can only be carried out by patients in easy circumstances and who are intelligent enough to appreciate the gravity of the affection and the necessity for unlimited perseverance. We are so helpless, apart from this new treatment, in regard to the affection that we welcome even the most tedious and difficult course that offers a hope of success. I have long been of the opinion myself, however, that many cases of ichthyosis improve or almost disappear during adult life; since almost all the cases that we see are in children, and we are hardly ever consulted for the affection by grown-up persons. Of course, in most cases the patients soon learn the hopelessness of therapeutic effort, and cease endeavoring to find a cure; and skin affections are generally regarded as personal reflections, and are not talked about. Still, cases in adults would be seen from time to time, if only accidentally in the course of examination, if the affection was as frequent as in children.

¹ Monatshefte für praktische Dermatologie, December 15, 1901.

Impetigo Contagiosa. The contagiousness of this affection is universally accepted; yet epidemics are not common. In an experience of several years in an orphan asylum of almost 1000 children I have seen only isolated cases. Ohmann-Dumesnil¹ reports 1 of 13 cases in St. Louis directly traceable to infection from a single source. The treatment he recommends is inunction with 6 per cent. to 12 per cent. campho-phenique salve, with or without subnitrate of bismuth. Engmann² finds the bullous form, which is rare in my experience, of common occurrence, especially in summer and in institutions. Grindon³ records a case of this kind in a child five days old. The affection appeared on the third day of life, the source of infection being the father, who got the disease from a barber shop. The entire body became affected; the epidermis peeled off from the palms and soles; yet the child nursed and slept well, and the bowels and kidneys acted normally. The temperature was 100° F. The child seemed to be improving; but on the twelfth day it had ten convulsions in rapid succession, and died with a temperature of 104° F. I should attribute the unusual result to secondary pus infection of the bullæ and sepsis. Besides the father, a brother aged four years, a sister aged three years, and the nurse got typical attacks of bullous impetigo. The local treatment consisted of the use of citrine and zinc ointment in equal parts, together with the employment of boric acid in saturated solution and dry.

Cassarini⁴ has made cultures in a number of these cases, finding chiefly the ordinary staphylococcus aureus. In a few cases the albus was found; but the disease then ran a very short course. This is of interest in connection with the experiments on eczema of Bender, Bockhart, and Gerlach, who found that inoculation with pyogenic cocci alone caused one or other form of pyogenic infection, including impetigo, while the use of the toxins alone caused typical eczema.

Iododerma. Two marked cases of a characteristic eruption from the internal employment of iodine compounds have been reported. Mayer's⁵ case was in a female, aged sixty-seven years, suffering from cutaneous syphilis, who took 22 grammes of iodide of potassium in nine days. The eruption was of the tubero-bullous type, and first appeared after 4 grammes had been ingested. Small amounts of iodine were found in the serum of the bullæ, but none in the urine or the saliva. Rosenthal's⁶ case was tubero-fungous in appearance, and the lesions were

¹ Archiv für Dermatologie und Syphilis, December, 1901.

² Journal of Cutaneous and Genito-Urinary Diseases, April, 1901.

³ Ibid.

⁴ Archiv für Dermatologie und Syphilis, December, 1901.

⁵ British Journal of Dermatology, February, 1902.

⁶ Dermatologisches Centralblatt, October, 1901.

subjected to careful microscopic examination. They were found to be inflammatory granulomata of the mesoderm, with hyperkeratosis and parakeratosis, and prone to undergo rapid retrograde metamorphosis. There were also extensive inflammatory changes of the bloodvessels. The occurrence of the eruption does not seem to bear any reference to the size of the dose administered, but to depend upon the personal idiosyncrasy of the patient.

I append a picture (Fig. 17) of a case of the kind that I observed some time ago. The tubercous fungating lesions were most marked upon the legs; but there were scattered ones upon the trunk, upper limbs, and face. No certain history of iodine ingestion could be

FIG. 17.



Iododerma. (Author's case.)

traced; but the mother had administered various remedies to the child for some trivial affection.

Keloid. Spontaneous keloid arising independently of any antecedent lesion or scar formation is exceedingly rare; Reiss¹ states that it occurs but once in from 2000 to 6000 cases of skin disease. He has seen but two cases, and the only other recorded case of multiple spontaneous keloid is that of de Amicis. He records a case in a girl, aged twelve years, in whom the affection had appeared during the last few years, progressing slowly. The entire anterior thorax and the flexor surfaces of the arms were covered with a mass of pinhead to pea-sized

¹ Archiv für Dermatologie und Syphilis, June, 1901.

globular or ellipsoidal, rose-colored, very hard, elastic tumors of the corium. On the thorax there were 124, and on the arms 82 tumors. There were a few upon the thighs, but none upon the face. Some of them showed the crab-like processes so characteristic of ordinary keloid. Some of the smallest were not yet hard, and evidently growing; others of the oldest had lost their hardness and globularity, had sunk in, and looked more like atrophic scars. Some time ago I reported a case of traumatic origin in which there were forty keloidal lesions upon the backs of the wrists and hands, their cause being a burn with burning lye. Spontaneous retrogression took place in the course of time, without any treatment at all, leaving simply pigmented and slightly depressed scars. Such a termination is extremely rare, since the keloidal tumors hardly ever undergo any other change save growth.

THE TREATMENT OF KELOID remains in its old unsatisfactory condition. Galewsky¹ reported at the Seventy-third Congress of German Naturalists and Physicians, at Hamburg, that he had gotten good results from thiosinamine injections, together with the use of a plaster or salve of the same substance in two out of three cases. The consensus of opinion, however, is entirely against its having any efficacy; Jarisch in his recent text-book does not even mention the drug; and I have entirely failed to get any appreciable effect from it myself. Phototherapy would seem to be the most hopeful remedy, and both radiotherapy and actinotherapy have been employed; but the results announced are as yet conflicting, and it is too early to make any definite statements concerning them.

It may be worthy of note in so hopeless a condition that Péré² reports great improvement in a case of keloid following extirpation of the cervical glands after forty local injections of 20 per cent. creosote oil made in the course of four months.

Leprosy. A number of articles have appeared describing the disease in various parts of the world, and emphasizing the modern conception of its almost universal prevalence. It was only supposed to have disappeared from the civilized world because its occurrence was neglected. Coni³ claims that there are 3000 lepers in Brazil, 800 in Argentina, 150 in Paraguay, 43 in Uruguay, and not less than 20,000 to 30,000 in Colombia, in a population of 4,000,000. The matter has been made the subject of governmental investigation in Crete, where the disease has always been endemic. Prince George appointed a lepra commission last year, under the renowned leprologist, Ehlers, and they found

¹ Monatshefte für praktische Dermatologie, November 15, 1901.

² Archiv für Dermatologie und Syphilis, December, 1901.

³ Annales del Circulo med. Argentino, vol. xxiv., Nos. 1 and 2; Journal of the American Medical Association, June 1, 1901.

some 600 lepers upon the island. The United States Marine Hospital Commission appointed to investigate the origin and prevalence of leprosy here has reported that there are at least 278 cases here, more than half of them in Louisiana. Of these 145 are American, and 120 foreign born; the rest are of uncertain nativity.

The Cretan Commission recommends the usual isolation measures. The Marine Hospital Commission advises the establishment of a National Leper Retreat, preferably in the dry Southwest, or on the Pacific coast, or on an island in the Mexican Gulf. An act has been introduced in Congress putting all lepers under the care of a single Leprosy Commission, to which every State Board of Health may turn over its cases. There is also to be a National Leper Home in Yellowstone Park.¹

This subject was considered at length in last year's review, and I see no reason to change the views that I then expressed. It is perfectly proper to establish either State or National asylums for such of these cases as are destitute and public charges; but the ordinary cases are better cared for at their homes or in our general medical institutions. The danger of transmission is extremely small under any ordinary circumstances; it does not compare in the remotest degree with that from tuberculosis.

As regards the contagion itself, Herbsmann² claims that it is not yet settled; and in the discussion on his paper Kaposi stated that not a single case of undoubted direct transmission was on record, the apparent rapid spread of the disease in the Sandwich Islands, Livonia, and elsewhere being due to more exact diagnosis and careful search for cases; and that all direct transmission experiments, as made by Daniellsen and others upon healthy individuals, had been failures. Heredity was believed to be the essential factor by Zambaco Pasha, von During, Petrini di Galatz, and others. On the other hand, Lassar, Joseph, Pospelow, and Hallopeau proclaimed their belief in its contagious nature. T. C. Booth³ advances the astonishing theory that it is transmissible by the clothes, basing his opinion upon a single case born in Norway, but a resident in the United States for many years. Palm⁴ believes that there must be an intermediate host, occupying the same relation to the bacillus that the mosquito does to the filaria sanguinis hominis and the malaria germ. He believes this host to be the body louse. A similar opinion is popularly prevalent in the Sandwich

¹ Journal of the American Medical Association, June 29, 1901.

² Monatshefte für praktische Dermatologie, October 15, 1901.

³ British Medical Journal; Monatshefte für praktische Dermatologie, October 15, 1901.

⁴ Monatshefte für praktische Dermatologie, October 15, 1901.

Islands, as testified to by Scott,¹ the mosquito being blamed for it. Hutchinson has several times during the year taken occasion to reiterate his well-known views as regards the relationship of fish diet to the disease; but his opinions are not coincided with by other authorities.

Glück² claims to have detected the initial lesion of leprosy in three personal cases. It was situated on the skin, appearing as a rounded, flat, painless, reddish infiltration, which may grow to hand size and become anæsthetic. It is more commonly seated upon the nasal mucosa. Glück's experience is remarkable, in view of the fact that the initial lesion of the disease is so inconspicuous that it has hardly ever been detected.

Chaulmoogra oil is still the most approved treatment for the disease. Hallopeau and Du Castel³ report on Tourtoulis Bey's investigations. By mouth the remedy is often badly borne when continued, as it must be for long periods of time; and the drug is often adulterated, as its exact composition is not known. The best results are obtained from hypodermic injections; and there have been apparent cures; but it must not be forgotten that spontaneous improvement not infrequently occurs. The best effects were gotten in tubercular cases; there was no effect upon the nervous forms. The treatment should be reserved for grave cases, since the oil injections are necessarily somewhat painful.

Ehlers⁴ has investigated the Guber spring at Srebrenitza, in Bosnia, which has had a popular reputation for ages for the treatment of leprosy, and reports that he is amazed and delighted at its unmistakable curative influence. The ulcerations of those under treatment healed, and the nodules and other symptoms disappeared. Glück, of Serajevo,⁵ coincides with this opinion. He has treated 26 lepers with the water, 10 being tubercular, 9 nervous, and 4 mixed cases. The Guber water was applied externally by baths and wet compresses; while the internal dose was gradually increased from a few drachms to 1½ litres daily. Neither appetite nor digestion was unfavorably influenced. The advancing disease process was always checked; many patients were discharged improved; and while Glück does not claim that cures were effected, he does note a very great improvement in both the general and the local conditions. This is astonishing testimony, although Guber water contains both arsenic and iron; but Ehlers, who was President of the Cretan Leprosy Commission, can speak with

¹ Monatshefte für praktische Dermatologie, October 15, 1901.

² Wiener medicinische Woch., 1901, Nos. 29, 30, 31.

³ Medical Review of Reviews, April, 1901.

⁴ Journal of the American Medical Association, August 3, 1901, Nos. 1, 4, and 6.

⁵ Monatshefte für praktische Dermatologie, May 1, 1901.

authority upon the subject, and his claims are worthy of careful investigation.

Jonathan Hutchinson¹ announces the cure of two cases of anæsthetic leprosy cured by extended treatment with small doses of arsenic, together with a liberal diet, and, of course, abstention from fish. He feels more hopeful than formerly, since a number of cases have been cured by removal to a non-leprosie district, and the use of non-leprosie and antibacterial food.

Goldschmidt,² believing that the rattle-snake poison treatment advocated by Marcoudes de Monera does good by the methæmoglobinæmia it causes, administered chlorate of potash in 45 gramme doses to a case. This patient improved, though he was badly poisoned. Marked methæmoglobinæmia occurred. Raynaud³ has treated a number of cases at the hospital at Mustapha with the cacodylate of soda. There was rapid improvement in the weight and the general condition; the cachexia disappeared; many of the ulcerations healed; and the tumors diminished in size. The drug is not curative, but it does good. The dose was 5 to 10 centigrammes daily.

It seems to be a question whether any cases of leprosy have really been cured at all. It is true that Ehlers⁴ found two complete spontaneous cures in Crete, and Daniellsen and Bie have reported 30 permanent cures in their long experience at the Bergen Leper Hospital. But von Babes, who issues in Nothnagel's *Specielle Pathologie und Therapie*, xxxvi., 1901, the first complete monograph upon the disease since von Bergmann's, in 1897, states that there is no authentic case of cure on record. Chaulmoogra oil, the salicylic preparations, and other things may cause the process to stand still for a time; and von Babes has a leprin, which acts like tuberculin in consumptive patients, which may do some good. But on the whole, a very conservative and almost hopeless attitude is the only one that we are in a position to assume as regards the therapeutics of the disease.

Lupus Vulgaris and Tuberculosis Cutis. It is desirable to consider these affections together, since they are closely related etiologically, and in some forms difficult to distinguish clinically from one another.

Interest is still centred on the treatment of lupus; and, though the disease is much rarer here than in Europe, the Eastern immigration is supplying us with a number of cases. The development of the permanganate of potash treatment is the most important novelty of the

¹ Indian Medical Record; New England Medical Monthly, January, 1902.

² Monatshefte für praktische Dermatologie, October 15, 1901.

³ Annales de Dermatologie et de Syphiligraphie, November, 1901.

⁴ Loc. cit.

year. Hallopeau¹ reports 4 cases treated with the dry powder or with a 2 per cent. solution, in which the lupus rapidly improved and the lesions healed. He believes that the drug has a specific action in addition to its cauterant effect. He does not claim cures; and Laredde drew attention to the fact that remedies that only improve conceal the real disease and are as bad here as in carcinoma. The entire *raison d'être* for actinotherapy in its treatment is the completeness and efficacy of its cures. Belemsoff² claims to have gotten very good results; several applications, preceded by a 10 per cent. solution, sufficed to destroy the diseased tissue, leaving a clean ulceration that healed under iodoform gauze. Butte,³ the originator of the method, reports 16 favorable cases. His method is as follows: After careful cleansing of the affected tissue with ichthyol soap or other antiseptic, he covers the patch with compresses soaked in lukewarm 2 per cent. permanganate of potash solution for twelve to fifteen minutes. This is repeated once daily for ten days; then a 1 per cent. solution is used on alternate days. No analgesic is required. Most of the cases were cured in from one to three months; in one case a year was required. It is to be feared, in this as in so many other cases, the originator of the method of treatment has obtained results unattainable by others; but I should be willing to try it in cases where actinotherapy, the treatment of election, could not be applied.

Max Joseph⁴ recommends the employment of a resorcin paste, as follows:

R.—Resorcin	.	.	.	.	.	.	.	.	.	30 grammes.
Zinci oxidi,										
Amyli	.	.	.	.	.	.	.	aa	20	“
Vaseline (yellow)	.	.	.	.	.	.	.	q. s.	100	“ —M.

This is a simple method, not requiring the complicated apparatus of either the Finson light or the Hollaender hot air treatment, and Joseph says he has used it for over two years with good results. It destroys the lupoid tissue, but does not affect the normal skin. Applied continuously, the lupoid tissue is necrosed in three days. Moist compresses are then applied until the wound clears up; the treatment is then renewed until the last traces of lupoid tissue are removed.

The Röntgen method has been considerably employed in the treatment of the disease. Sjögren⁵ claims to have gotten excellent results in

¹ Annales de Dermatologie, April, 1901.

² Revue de Thérapie, vol. lxvii., No. 24.

³ Annales de Thérapie dermatologique et syphiligraphique, 1901, vol. i., No. 1.

⁴ Dermatologisches Centralblatt, July, 1901.

⁵ Fortschritte auf dem Gebiete der Röntgenstrahlen, 14, 4.

18 out of 27 cases. Greenleaf,¹ on the basis of four cases, advocates its use; he says that repair sets in almost immediately, and that the dangers are minimal. Grouven,² on the other hand, in the discussion at the Sixty-third *Versammlung Deutscher Naturforscher und Aerzte*, at Hamburg, stated that he had treated 53 cases of lupus and tuberculosis at the Bonn University Clinic with the method; he finds it very slow, and notes that relapses are neither later nor less frequent than with other methods.

I have had occasion to see something of the results of radiotherapeutic treatment in a number of cases, and have not been impressed with the results. There is no doubt that it is very effective in causing the destruction of tissue, both lupoid and scar; but it seems to rank with excision, without the certainty and definiteness of the surgical method. The destruction and cicatrization that it occasions can well be gotten by other chemical and mechanical means. It certainly does not rank with the light treatment, which is eminently conservative, does not cause ulceration, preserves the scar tissue, and effects absorption of the lupoid nodules. Extended consideration was given to the Finsen treatment last year, and I shall only state that it remains to-day the very best treatment at our disposal for lupus and tuberculosis of the skin.

The effect of various systemic infections upon lupus has long been known; and I can remark in passing that I have noted it in other granulomata, such as leprosy and syphilis. Bernhardt³ has made a careful study and microscopic examination of the nodules in a case of lupus that underwent an attack of variola. The disease was apparently cured; the microscope showed that many granulomatous foci were left behind; the disease reappeared, and Bernhardt thinks that the tendency to ulceration was greater than before the variolous attack. Agaschdanew⁴ saw a case that had lupus for two years completely cured by an attack of facial erysipelas. I see that he concludes his report, however, by the statement that the granulating surfaces had begun to heal; ulceration had therefore not stopped, and I am afraid that the case must be relegated to the category of the apparent cures that are not rare after intercurrent affections of this kind.

Lupus Erythematosus. The possible relationship of this condition to tuberculosis has continued to be discussed this year, with the result of a general tendency to discredit it. W. Pick⁵ has most carefully

¹ Buffalo Medical Journal, October, 1901.

² Dermatologisches Centralblatt, February, 1902.

³ Journal of Cutaneous and Genito-Urinary Diseases, April, 1901.

⁴ Memoiren der Kaukasischen medicinische Gesellschaft, 1901, No. 15.

⁵ Archiv für Dermatologie und Syphilis, December, 1901.

examined many cases, using the tuberculin reaction, and concludes that we have no right to assume any relationship between them. Von Poor¹ reviews the arguments of those who favor the assumption; they are that it usually occurs in tubercular subjects or in patients having a tubercular family history; that there is often a positive constitutional as well as a local reaction to tuberculin; that giant cells are present; and that transition forms into undoubtedly tubercular lupus vulgaris are not very infrequent, and tubercular foci are sometimes found in the erythematous disease. All these arguments are of very doubtful validity. Many cases show neither tubercular taint nor family history; other diseases react to the tuberculin test; giant cells are admittedly not characteristic of the tubercular granuloma; and, finally, other diseases, and notably cancer, may be engrafted upon erythematous lupus, and tuberculosis is no exception. On the other hand, the malady undoubtedly has relations to seborrhœa and to gastro-intestinal and uterine disturbances. Von Poor's conclusions are that lupus erythematosus is not due to Koch's bacillus or to the remote action of its products; there is probably no single cause; various peripheral and central irritations may cause it. Róna² practically agrees with him, calling attention to the fact that all kinds of things are dragged in to make out a tubercular family history, even the existence of granular swellings of indefinite origin in the parents, and that it has little value. I agree thoroughly with these conclusions, for I have never seen any reason to believe in the relationship of the two diseases.

In the Berlin Dermatological Society, on February 4, 1902, Lesser³ advocated actinotherapy as the most promising treatment for the disease. I have not had occasion to employ it in the disease, but I have seen good results in the hands of others. It will be very fortunate if it proves to be beneficial in this obstinate affection.

Nævus. The interesting congenital deformities known as linear nævus, systematized naevi, or to use Baerensprung's original term, nævus unius lateris, have been the subject of a number of papers, among which may be mentioned those of Kreibich,⁴ Cornelius Beck,⁵ Okamura,⁶ Montgomery,⁷ and Sprecher.⁸ The view as to its origin advocated by Montgomery seems most reasonable. It originates at an early stage of fetal development, when the embryonic layers are still

¹ Dermatologische Zeitschrift, April, 1901.

² Archiv für Dermatologie und Syphilis, June, 1901.

³ Monatshefte für praktische Dermatologie, March 1, 1902.

⁴ Archives de Dermatologie et de Syphiligraphie, April, 1901.

⁵ Monatshefte für praktische Dermatologie, May 1, 1901.

⁶ Archiv für Dermatologie und Syphilis, May, 1901.

⁷ Journal of the American Medical Association, October 26, 1901.

⁸ Monatshefte für praktische Dermatologie, October 15, 1901.

a plastic mass. Whatever the disturbing element is, it so affects what will later become the papillary layer of the skin that a group of cells is, as it were, pulled out of place, and remains displaced stretched along the line of the budding limb. The displacement is almost always unilateral, and frequently occurs along natural fissures, as the branchial clefts. There are objections to this explanation, but it is the best that can be offered.

The microscopic examinations have revealed the usual structure. Beck describes the long involved papillary processes cut in all directions by the section knife; the prickle cell layer three to four cells thicker than is usual, and the cutis normal. There were no inflammatory or degeneration signs.

Beck's patient was improved by thyroid treatment. Morris¹ advocates a non-operative treatment in certain cases at all events. He injects 15 to 30 minims of the tincture of *thuyaoccidentalis* into the middle of the verrucous mass. This he claims causes a plastic deposit which destroys the endothelial linings of the vessels, and a cure is often effected by secondary contraction. It cannot be employed in very large or pulsating nævi, since it might not cause local coagulation, but pass into the general circulation with perhaps disastrous results. His fear is well founded, since there are a number of cases on record in which trouble has ensued, yet it is precisely these cases that tax our therapeutic resources, since the smaller and non-pulsating varieties can be gotten rid of by various methods.

I prefer electrolysis in all cases where the nævus is not so extensive that surgical interference offers the only hope of cure. The method is precisely similar to that employed for the electrolysis of hairs; but a stronger current, some 10 milliampères, at least, must be employed, otherwise it takes too long. I have had very successful results, with hardly any scarring, in a number of cases in infants and adults. I would emphasize the great importance of commencing treatment at the very earliest opportunity, even a few days after birth. While the deformity is a congenital one, it is usually small at birth; but it rapidly increases in extent during infancy, and, of course, the larger it is the more difficult does its treatment become. I have done it myself on infants three weeks old.

The necessity for early intervention is emphasized by the case reported by Ravogli.² The patient was a female, aged thirty-three years, who had had a quarter-sized verrucous nævus upon the sternum since birth. At thirty-one, when pregnant with her second child, it

¹ Cincinnati Lancet-Clinic, August 24, 1901.

² Journal of Cutaneous and Genito-Urinary Diseases, June, 1901.

became enlarged and tender, ulcerated and bled. Then black spots appeared around it. It was removed by excision; but cicatrization was very slow, and the scar remained contracted and painful. New dark-brown nodules appeared in the vicinity, and a new tumor developed. Microscopic examination showed it to be a true melanocarcinoma. The later treatment consisted of large doses of Fowler's solution and arseniate of soda internally, and intramuscular injections of a 10 per cent. solution of cacodylic acid (arsenic dimethyl). Nothing could be done locally, and there is no note of the result. The case was apparently one in which phototherapy might have been tried.

Noma. This is a gangrenous stomatitis in its commonest form, though cases have been described affecting the vulva, anus, and external ear. Many investigators have described special bacilli as the etiological factor of the disease; others have attributed it to the Loeffler organism, and Perthes holds that it is a mycotic process caused by a streptothrix. Bishop and Ryan, in 1895, described a pseudodiphtheria bacillus, or a weakened true diphtheria organism, as its cause. Freymuth and Petruschky, in 1898, found diphtheria bacilli in two cases, one of the genitalia and one of the alveolar process. Walsh¹ has carefully studied seven cases and reported on them to the Philadelphia Pathological Society. Four of these began as a stomatitis, and in some of them there had been true diphtheria shortly before. The bacterial diagnosis was made by means of smears, cultures, and inoculations of guinea-pigs and rabbits. The diphtheria bacilli were also found, though in most cases there were admixtures of streptococci, staphylococci, and other micro-organisms. It seems probable, therefore, that in a large proportion of cases, at all events, noma is caused by the diphtheria organism; and lesions not distinguishable clinically from an ordinary ulcerative stomatitis are sometimes due to the same cause. Blumer and MacFarlane,² reporting upon an epidemic of measles followed by cases of noma in the Albany Orphan Asylum, state that they found a leptothrix $\frac{1}{2}$ a micron broad and 5 to 20 microns long, which they regard as the cause of the affection. It was usually bent, or curved, or wavy, and it stained well with carbol-fuchsin. Cultures failed. Autopsies showed the presence of a variety of micro-organisms; so that while the infection is single at first, it becomes mixed later on. Blumer and MacFarlane hold that probably more than one micro-organism can occasion the disease, but that the commonest etiological agent is the thread-like leptothrix described above.

Surgical treatment for noma is advocated by H. von Ranke.³ He

¹ Journal of the American Medical Association, June 1, 1901.

² American Journal of the Medical Sciences, November, 1901.

³ Monatshefte für praktische Dermatologie, May 1, 1901.

states that formerly he saved no cases at all, while now, by the early and energetic use of the knife and the thermocautery, he has saved three. The entire gangrenous area with the surrounding healthy tissue must be radically excised and the edges of the wound thoroughly cauterized. Even bone should be removed if the disease has invaded the tissue near it.

This advice is proper, since excision is of course the only thing to be done when the gangrenous process has started in. Since, however, noma is usually seated on the face, the destruction of tissue and deformity entailed will in most cases be frightful; and the remedy of defects by subsequent plastic operations is not likely to be very satisfactory. Walsh's paper, in conjunction with other similar findings, gives us an important hint as to a treatment that may arrest the spread of the disease, and can certainly do no harm. Antitoxin should be early and freely used in all cases. I do not know that this has yet been done; but it should certainly be tried in a disease that is so fatal and in which surgical interference does not seem very promising.

Œdema. Heidenhain's investigations have shown that localized œdema of the skin can occur from a direct increase in the secretory activity of the endothelium of the lymphatic vessels, as well as from passive increase of the lymphatic pressure. The condition has been the subject of repeated investigation since Quincke, in 1882, described the first case; but I cannot say that we are any nearer to a satisfactory explanation of its origin.

Kohn¹ correctly thinks the condition due to some disturbance of innervation of the vessels; but the exact nature of the underlying neurosis is unknown. Reflex irritations in neuropathic patients are supposed to excite the vasodilator nerves, and thus cause congestion and serum outpouring. Alcohol, traumatisms, and malaria have been blamed as the exciting cause. This is, of course, no explanation of the change in osmotic equilibrium of the tissues.

A case of migrating œdema coming on in various parts of the body without appreciable cause in a healthy male adult is recorded by Bernhard Smith.² It usually came on in the night while asleep, and disappeared spontaneously during the following afternoon. Kohn's³ case affected the hands, appearing whenever they were dipped in hot water. In that of Chisholm⁴ the throat mucosa, as well as the integument, was involved, and the condition was serious for a time. Torres⁵ saw a case occur in association with a rheumatic fever that proved fatal upon the

¹ American Medicine, December 21, 1901.

² British Journal of Dermatology, August, 1901.

⁴ Fort Wayne Medical Journal, February, 1902.

³ Loc. cit.

⁵ La Semina medica; Monatshefte für praktische Dermatologie, August 15, 1901.

tenth day ; and Trousseau's¹ also had arthritic symptoms. In Malherbe's² case the condition was not a true angioneurotic or circumscribed œdema, but rather the permanent connective-tissue hypertrophy that is not infrequent after repeated attacks of erysipelas.

The treatment of the condition is very unsatisfactory. Max Joseph³ recommends only an alum lotion. In Chisholm's case, where the throat was affected and suffocation imminent, strychnine and nitroglycerin hypodermically did no good. He therefore painted the affected surface with a full-strength solution of adrenalin chloride ; in two minutes improvement set in, and in five minutes respiration was easy and natural. The patient swallowed what remained in the mouth ; and a drop or two was used on a swollen eyelid with good result. The œdema of other parts gradually disappeared ; and two subsequent slighter attacks were successfully treated in the same way. This is a valuable suggestion even where the skin only is attacked, and especially so when the mucosæ are also affected.

Pruritus. The intractability of this affection is evidenced by the great number of remedies recommended for its alleviation or cure and its constantly recurring consideration in our medical journals. A few suggestions from authoritative sources will not be out of place.

Joseph⁴ says that bromine and tannin in combination are very efficient in all forms of pruritus ; the bromine being anæsthetic and the tannin astringent to the skin. He has for the last twelve months used a dibrom-tannin jelly, composed of 20 per cent. of bromine and 40 per cent. of tannin, first suggested by Brat, and called bromocoll. Lutaud⁵ uses an ointment composed of $2\frac{1}{2}$ grains of veratria to the ounce of lard, and claims that this is especially good for the localized obstinate forms of pruritus that are so common at the menopause. When the pruritus is general he employs the drug internally, giving $\frac{1}{180}$ of a grain in pill-form once daily, and gradually increasing the number of pills until the patient takes six daily, administered half an hour before meals. Sieburg⁶ has been very successful in rebellious cases with local subcutaneous injections of 300 c.c. of very weak cocaine or phenic-acid solutions. He admits that the nature of the fluid is of less importance than its quantity, and I suspect that its effect is due to the pressure

¹ Presse Médicale, 1901, No. 19 ; Monatshefte für praktische Dermatologie, August 15, 1901.

² Journal des maladies cutanées ; Dermatologisches Centralblatt, September, 1901.

³ Encyklopädie der Haut-und Geschlechtskrankheiten, p. 354.

⁴ Journal of the American Medical Association, May 4, 1901.

⁵ Journal de Médecine de Paris ; American Medicine, May 4, 1901.

⁶ Centralblatt für Gynäkologie ; Journal of the American Medical Association, August 3, 1901.

that it exerts. Schamberg¹ recommends carbolic acid, which relieves cases even when months old. He administers it internally as follows : carbolic acid, 24 to 72 minims ; glycerin, 1 to 2 drachms ; sherry wine to 5 ounces ; the dose being a teaspoonful taken in water after meals. This form of phenol is not unpalatable, and agrees well with the stomach. It does not cause any renal irritation. It acts as an anti-fermentative in the intestinal tract, and is a valuable antiseptic. Lactic acid is advocated by Du Castel² as an intestinal antiseptic in the various ichthyodermatoses. The dose is 6 to 20 drops daily, best administered in sugared water. The amount can be increased up to 2 grammes daily, according to the patient's age and the obstinacy of the disease ; and it can be taken for months without disturbing the general condition. In one case glycosuria appeared during the treatment ; but whether due to it or not is unknown.

Local measures differing from the usual applications are proposed by Jaenicke.³ Systematic brushing of the affected skin with a soft brush for ten to twenty minutes, at first thrice and later once daily, he finds to be very efficacious in relieving the itching. This is especially the case if the brushing is followed up by an alcohol rub. Banks⁴ uses the actual cautery in obstinate cases of pruritus ani. The patient is anæsthetized and put in the lithotomy position, and the skin is well "frizzled" for $1\frac{1}{2}$ inches around the anal orifice with the bulb of a Paquelin cautery.

My own experience leads me to emphasize the importance of internal medication in many of these cases. They are frequently due to intestinal auto-intoxication ; and nothing has given me such good results as betanaphthol bismuth or orphol in doses of from 10 to 60 grains daily, according to the patient's age. Schamberg's carbolic acid treatment is undoubtedly worth trying ; and I would suggest its combination with the external local application of the pure drug, followed at once by alcohol, of course, if necessary. The worst cases require the cautery, and nothing else does them so much good. I do not go quite so far as Banks, however ; a superficial cauterization, without anæsthesia, is usually quite sufficient.

Psoriasis. At the session of the Société Française de Dermatologie of April 15, 1901, Hallopeau⁵ reaffirmed his opinion of its parasitic nature, to which attention was drawn in last year's review. The chief

¹ Therapeutic Gazette, June 15, 1901.

² Presse Médicale ; Monatshefte für praktische Dermatologie, May 1, 1901.

³ Centralblatt für innere medicin ; Monatshefte für praktische Dermatologie, May 1, 1901.

⁴ British Medical Journal ; Therapeutic Gazette, October 15, 1901.

⁵ Archiv. de Dermatologie et de Syphiligraphie, April, 1901.

basis for his belief is apparently Destot's well-known experiment, in which inoculation of a healthy man with blood and lymph from psoriasis papule developing on an infantile vaccination caused the appearance of a general psoriatic eruption, which was cured by arsenic. All the other papers of the year have been devoted to the treatment, which is certainly an ever-present problem both to the dermatologist and to the general practitioner. Blaschko¹ calls attention to the fact that since the introduction of chrysarobin in 1870 and pyrogallol later the older methods of treating the disease have been largely forgotten. He has been trying them with excellent results. Perhaps the best of them is Roehard's salve. It is a mixture of the iodide of mercury and iodine, made by rubbing up iodine and calomel together. The original prescription is :

R.—Iodi pur.	0.6
Hydrarg. chlorid. mite	1.8
Vaseline or adeps suillis ad	100 —M.

Blaschko adds a little ether or alcohol to it. Very complicated chemical processes occur in its preparation ; the color may be yellow, red, or brown, in accordance with the quantity of alcohol employed and the amount of heat to which it is subjected while being made. A few patients have a marked idiosyncrasy against it ; it causes such irritation after the third or fourth inunction that it has to be given up. Others, especially children, bear it well for weeks. Persons who react badly to chrysarobin usually do well under it ; the psoriatic plaques melt away rapidly. It may be used on the face and around the eyes, since in cases that it suits it causes no irritation.

Alcoholic compresses are employed by Lau² for persistent and greatly indurated plaques, 2 per cent. of salicylic acid being dissolved in 70 to 92 per cent. alcohol. They are left on over night, and next day the scales are removed with soap and water and the scrubbing brush. Thyroid internally is recommended by Tolatz³ on the strength of a single case cured with it. He administered capsules containing 10 centigrammes up to six daily ; but he also employed a salicylic acid and zinc ointment. I very thoroughly disapprove of the employment of thyroid in this disease. I have never seen any good results from its exhibition, while I have seen some very undesirable and untoward effects.

I went into the question of the arsenic treatment of psoriasis in some detail last year,⁴ and affirmed my belief in its efficacy. Steiner⁵

¹ Archiv für Dermatologie und Syphilis, May, 1901.

² Therapeutische Monatshefte, January, 1901.

³ Boston Medical and Surgical Journal, September 12, 1901.

⁴ PROGRESSIVE MEDICINE, September, 1901.

⁵ Archiv für Dermatologie und Syphilis, July, 1901

reported similar conclusions at the Vienna Dermatological Society, in February, though his views were not agreed to by most of the members. Hebra's influence is still too potent in that city to permit any but the local treatment for dermatoses being popular. Démange¹ and others report good results from the subcutaneous injection of sodium cacodylate, some cases being cured, so far as psoriasis can be cured, in as short a time as six weeks.

Rochard's salve will, I think, prove valuable in the not inconsiderable number of cases that cannot bear chrysarobin in effective doses and cannot use pyrogallol. The internal administration of arseniate of soda or the cacodylates, preferably by hypodermic injection, is an important aid to the local treatment, and should never be neglected.

Purpura. A number of rare forms of this affection have been described during the year, and some original investigation has been done as to its cause.

Schramm,² in a case of *purpura hemorrhagica*, found a number of the small rapidly rotating bodies in the blood that have been described by Letzerich, and which he considers to be spores. But cultures from the blood taken thirty-six hours before death gave only pure cultures of *staphylococcus aureus* in all media. Letzerich's bacillus was not found. Borgen and Voss³ each describe a case of *purpura fulminans*. Bergen's case was two years old, and death occurred two days after the beginning of the hemorrhages. The blood was effused with immense rapidity under the skin in the form of symmetrical, reddish-black ecchymoses. The post-mortem showed general anæmia of the internal organs, and swellings of the tonsils and cervical glands. The thymus weighed 30 grammes. Microscopically the hemorrhages showed a diffuse blood infiltration around the vessels in the interstices of the tissues. Cultures from the spleen, heart blood, and gland fluid showed abundant streptococci in short chains. Inoculation experiments with fragments of the glands showed great virulence; the inoculated animals died, and streptococci were found in their heart blood, spleens, and livers. Borgen classifies this case as a streptococcic pyohæmia with a hemorrhagic diathesis. Voss' case was aged five years, and died on the third day. The child walked barefoot, and probably infected itself through a wound of the right great toe.

A *gangrenous purpura* is recorded by Johnston.⁴ The patient was a female, aged thirty years, who had miscarried shortly before. The

¹ Dermatologisches Centralblatt, May, 1901.

² Chicago Medical Recorder, December, 1901.

³ Norsk Magazin for Laegevidanskaben, 1901, p. 463.

⁴ American Medicine, September 14, 1901; American Journal of Surgery and Gynecology, October, 1901.

hemorrhage came on suddenly, its chief seat being the subcutaneous tissue of the nose and the cheeks adjoining. Three days later the nose became gangrenous ; other hemorrhages occurred on the legs and body ; there was vaginal bleeding and an offensive discharge from the cervix. The temperature was 101° F., the pulse 130, full and bounding. Her mind was clear ; there was no blood in the urine or feces ; but the lungs became involved, and death occurred two days later.

Bouulloche¹ recounts a similar case that ended in recovery.

FIG. 18.



Iodic purpura. (Stengel's case.)

Alfred Stengel² records a case of purpura due to iodine. (Fig. 18.) The drug causes various dermal eruptions, of which acne is the commonest ; furunculosis or a bullous exanthem is rarer, and a purpuric eruption most rarely of all. Fournier, Mackenzie, and von Janowsky have recorded indubitable cases in which the purpura came and went as the drug was administered or withheld. Syphilis has been blamed as the cause of the hemorrhages, since iodine is most commonly given in luetic cases ; but Duffey, Raymond, Vidal, Bradbury, and many

¹ *Annales de Dermatologie et de Syphiligraphie*, July and August, 1901.

² *Therapeutic Gazette*, January 15, 1902.

others have noted them as occurring in non-syphilitics under the influence of the iodide of potassium. The mucous membranes are sometimes affected; there may be pains and swellings of the joints; and coryza and other iodic symptoms are sometimes present also. The amount of the drug required to cause these effects varies, but it is occasionally very small; Robinson notes a case in which they appeared after six one-grain iodide of potash doses. Stengel had two cases, one in a man, aged twenty-three years, in which the drug was administered for asthma, and the other in a female, aged twenty-four years, in which it was given for cardiac disease.

It seems probable that all the forms of purpura, from the mildest to the more severe, are closely related, and it is now commonly regarded as an infectious disease allied to rheumatism and the erythemas. The evidence is accumulating that the malady is a manifestation of systemic streptococcus infection.

Radiotherapy. A legion of papers has appeared during the year dealing with the application of the Röntgen rays as a therapeutic agent in various dermatoses. They are deservedly of far more extensive consideration than it will be possible to give them here; but some note must be made of the dangers and limitations of the process.

On this latter point my own opinion, based upon a fairly exhaustive study of the literature and some personal experience, has gradually become definite. I believe that radiotherapy will find a place in the treatment of certain skin diseases; but I also believe that it has its great dangers and disadvantages, and that its employment should at present, at all events, be left in the hands of experts in the method alone. The mere fact that one of the pioneers in its use for diagnosis and treatment in this city obliges all patients in whom he intends to employ it to sign a formal and legal release for all claims for damage resulting from it before he makes a single examination or application is a significant fact. It is admitted by some of the most ardent advocates of the method that only a small proportion of the cases in which untoward effects are manifested find their way into the medical journals. There have been enough of them published, however, to justify an emphatic note of warning.

Oudin¹ reports three cases in which vast ulceration occurred five to six months after the exposures, which were not even limited to the parts exposed. He believes that the radiodermatitis is a secondary trophoneurosis similar to malperforans or acute decubitus. Fournier and Barthelemy² report a case in which scleroderma ensued after apply-

¹ Bulletin de la Société d'Electrotherapie; Journal of the American Medical Association, May 11, 1901.

² Monatshefte für praktische Dermatologie, April 1, 1901.

ing it for intercostal neuralgia. Towle¹ concludes that the treatment is not without danger, unless the greatest care is exercised; that the effects remain for a long time, and that recovery is very slow. Death finally occurred from ulceration of the abdominal parietes after two prolonged exposures in a case of fracture of the femur;² and I have elsewhere in this review noted another similar case. Beck³ describes the various forms of radiodermatitis, and states that they differ from ordinary burns only in the fact that they occur so much later after the injury. He recommends that the patient should always be distinctly informed of the dangers before using the rays. Johnston⁴ records two cases of precancerous keratosis probably due to the X-rays. Both occurred in Röntgen-ray workers, and one of them was a surgeon. There was no ulceration, but the skin of the exposed parts became reddened, thickened, and hard, as in scleroderma, and there were excruciating burning pains. The cornifications were at least potentially malignant; they were, therefore, thoroughly excised, and the dermal tissue repaired by skin-grafting. Scholtz⁵ and several others record cases similar to some of the above.

The suggestions for the avoidance of these ill-effects are various and even contradictory. Schiff⁶ recommends the use of hard tubes, which are not so powerful and rapid as the soft, but less dangerous. Schürmeyer⁷ recommends connecting the mask with the earth; he rejects lead as the material, claiming that it acts as a condenser, and causes burns. He uses papier-maché, and does not allow the mask to come in contact with any part of the patient. Beck⁸ suggests the use of low vacuum tubes, and recommends careful individualization. Scholtz⁹ holds that the intensity of the light action depends upon the spark length of the conductor. Individual susceptibility varies greatly; therefore, we should always be very cautious in beginning treatment.

As regards the treatment of radiodermatitis, Beck, as above stated, holds that they should be handled like ordinary burns. When it is similar to one of the first degree he uses Burrow's solution. If bullæ have formed, as in a burn of the second degree, the blisters should be opened and a xeroform gauze dressing applied; later on a 10 per cent. xeroform-lanolin ointment can be employed. In the severest forms

¹ Boston Medical and Surgical Journal; Therapeutic Gazette, August 15, 1901.

² New England Medical Monthly, October 15, 1902.

³ Journal of the American Medical Association, February 1, 1902.

⁴ Philadelphia Medical Journal, February 1, 1902.

⁵ Allgemeine medicinische Central-Zeitung; Dermatologisches Centralblatt, June, 1901.

⁶ Monatshefte für praktische Dermatologie, November 15, 1901.

⁷ Ibid.

⁸ Loc. cit.

⁹ Loc. cit.

removal of the dead tissue is indicated, followed by the usual subsequent treatment.

On the reverse of the medal are the good results, to the recording of which most of the articles upon radiotherapy have been devoted. In sycosis, ringworm, and folliculitis, permanent cures have been reported by Spiegler, Kienbock, Ehrmann, and Schiff¹ at the Vienna Dermatological Society. Zechmeister² advocates it for ringworm of the beard; as also does Rinehart.³ As regards lupus and tuberculosis of the skin Sjögren has cured six by this method; Greenleaf,⁴ four; Holland,⁵ two; Scholefield,⁶ one; and Grouven⁷ has treated no less than fifty-three cases with soft tubes, with satisfactory cosmetic and curative results, though he admits that the treatment was tedious and that relapses occurred. It has been employed satisfactorily in lupus erythematosus by Moller,⁸ in hypertrophic scar by Harris,⁹ and in three cases of sarcoma with fair results by Pusey.¹⁰ In alopecia areata Holzknicht's¹¹ results were not satisfactory.

In carcinoma and epithelioma a multitude of experimenters have tried the rays. Good results are reported by Steinbeck,¹² Williams,¹³ Rhinehart,¹⁴ Allen,¹⁵ Kinnaird,¹⁶ Morton,¹⁷ Pfahler¹⁸ and others.

Chislett,¹⁹ after careful consideration of the subject based upon personal experience, concludes that the permanent results of cancer treatment by the X-rays are only slightly satisfactory, and that the danger of severe burning is great.

The Röntgen rays have been employed in a number of other dermatoses, the consideration of which would lead me far beyond my limits. The treatment is still in the experimental stage; and the permanency of the cures remains for time to demonstrate. I can only reiterate the opinion that the method is undoubtedly worthy of experimentation and

¹ Archiv für Dermatologie und Syphilis, April, 1901.

² Monatshefte für praktische Dermatologie, April 1, 1901.

³ Philadelphia Medical Journal, February 1, 1902.

⁴ Buffalo Medical Journal, 1901.

⁵ British Medical Journal; Monatshefte für praktische Dermatologie, October 15, 1901.

⁶ Ibid.

⁷ Monatshefte für praktische Dermatologie, November 15, 1901.

⁸ Dermatologisches Centralblatt, June, 1901.

⁹ Australian Medical Gazette; British Journal of Dermatology, July, 1901.

¹⁰ Journal of the American Medical Association, January 18, 1902.

¹¹ Wiener klinische Rundschau, October 13, 1901.

¹² Monatshefte für praktische Dermatologie, May 1, 1901.

¹³ Journal of the American Medical Association, September 14, 1901.

¹⁴ Loc. cit.

¹⁵ Medical Record, January 5, 1902.

¹⁶ Louisville Journal of Medicine and Surgery, March, 1902.

¹⁷ Journal of the American Medical Association, March 1902.

¹⁸ Therapeutic Gazette, March 15, 1902.

¹⁹ The Clinique, January 15, 1902.

development ; but that it has its distinct and serious dangers, and that it is in its present state entirely unfit for general medical employment.

Brief mention may be made here of the remarkable discovery that metallic radium emits rays similar to those called cathode ; Booth¹ inquires whether they may not possibly be utilized in medicine. Rollins² suggests the applications of aluminum capsules containing the metal in cases of lupus, cancer, etc. Danlos and Bloch³ demonstrated the effects of the metal upon healthy skin, and have treated lupus erythematosus with it, though the results were still undetermined at the time their report was made.

The treatment is much simpler and easier than that by the X-rays ; it is possible that something may be done with it in the future, but at present the very high price of radium stands in the way of its employment. There may be something in the metallotherapy that was in some vogue years ago, as there undoubtedly was in the blue-glass actinotherapy of General Pleasanton.

Sarcoma of the Skin. Various cases of this rare disease have been published, and some progress has been made in elucidating its pathology. Johnston⁴ gives an elaborate classification of the different varieties, which, however, seems somewhat too specialized for general use. The same author⁵ records a case of multiple angiosarcomata in a child, aged sixteen months. The clinical diagnosis had been vascular naevi ; but the microscopic examination showed masses of typical cells in concentric rows around the vessels.

Sarcomatosis of the multiple pigment type of Kaposi is reported by Sella,⁶ and this author is inclined to abandon the term sarcoma for this class of growths, preferring to call them granulomata. Similar cases are reported by Sequier and Bulloch,⁷ Gaucher and Sargent,⁸ and Koehler and Johnston.⁹ I have had two cases of the kind under observation for a long time past, and have come to the conclusion that the entire subject of sarcomatous affections of the skin needs radical revision. The clinical types are fairly well fixed ; and the pathological findings agree fairly well with the lesions that we are accustomed to regard as sarcomatous. But the course of the lesions and of the entire affection is not that of sarcoma. The progress of the disease is infinitesimally slow ; the general health remains unimpaired for many

¹ Medical News, December 21, 1901.

² Boston Medical and Surgical Journal, January 23, 1902.

³ Annales de Dermatologie et de Syphiligraphie, November, 1901.

⁴ British Journal of Dermatology, July, 1902.

⁵ Journal of Cutaneous and Genito-Urinary Diseases, March, 1901.

⁶ Ibid.

⁷ British Journal of Dermatology, June, 1901.

⁸ Annales de Dermatologie et de Syphiligraphie, November, 1901.

⁹ Journal of Cutaneous and Genito-Urinary Diseases, January, 1902.

FIG. 19.



Pigment sarcoma of the skin. (Author's case.)

FIG. 20.



Pigment sarcoma of the skin. (Photomicrograph by the author.)

years ; and the individual lesions are liable to undergo fatty degeneration and resolution, even independent of treatment. One of my cases has been under observation for five (Figs. 19 and 20), and the other for three years, and I cannot say that they are any worse, either locally or as regards their general health, than they were when first seen.

It is worthy of note in this connection that Massei¹ has seen a case of multiple hemorrhagic sarcoma cutis with laryngeal complications. Tumors and infiltrations similar to those of the skin occurred in the larynx ; here also they were benign, and even showed tendencies to retrogressive change. The trouble they caused was only mechanical. Massei is of the opinion that they are commoner than is supposed, and

FIG. 21.



Melanosarcoma. (Case of Carl Beck.)

would be found more frequently if they were oftener looked for ; that, like the skin tumors, they are attenuated forms of the lesions, bearing the same relationship to typical sarcoma that lupus does to tuberculosis.

L. Philippson² has made a study of ten of these cases, and is inclined to believe that they are caused by some virus penetrating the skin from without, which causes the spindle-celled proliferation.

Carl Beck³ has treated a case of melanosarcoma of the thigh and leg with radiotherapy, and is encouraged by the results obtained. (Fig. 21.) The growth had been excised a number of times, amputation being

¹ *Revue hebdomadaire de Laryngologie ; Medical Bulletin*, June, 1901.

² *Virchow's Archiv*, 1902, vol. clxvii. No. 1.

³ *New York Medical Journal*, November 10, 1901.

rejected. The X-ray was employed after the last operation ; and it has served to promote cicatrization and prevent relapse. The last report, made nine weeks after the operation, was satisfactory ; though the author admits that final recovery can hardly be expected at so late a date.

Trichophytosis. The nature and varieties of the ringworm parasite have again been the subject of investigation, without, however, permanent and definitive results. Saboureaud and the French school maintain that at least two distinct organisms cause the phenomena of the disease. The first is the parasite described by Gruby, the microsporon *Audouinii*, causing a contagious and refractory skin affection, and which is the commonest in the French schools. It is a small-spored organism, and clinically it grows only on the scalps of children. The real trichophyton has large spores, and is divided into two groups : the endothrix variety, in which the spores are inside the hairs, and which usually affects the scalp, and only occasionally appears on the body, and the ectothrix kind, commonest on the skin, sometimes affecting the scalp, and almost the sole cause of ringworm of the beard. The endothrix is transferred from man to man ; the ectothrix usually comes from animals. The suppurating ringworms, kerion and sycosis, are caused by a special horse ectothrix. Saboureaud makes as many sub-varieties as twenty ; all of which by no means tends to clarify our ideas upon the subject.

On the other hand, there is a German school which claims that there is only one trichophyton parasite, but that it is almost indefinitely multiform in appearance and mode of growth. As Ravogli¹ remarks, these considerations are of comparatively little interest to the practitioner. The treatment of these cases is the main point ; and more especially when ringworm occurs epidemically, as it frequently does in institutions, it taxes our patience and persistence to the utmost.

The rapidity with which ringworm spreads in orphan asylums and similar institutions is astonishing. In one containing 900 children, with which I am connected, a few cases were discovered last December ; and, in spite of the most vigorous measures and the expenditure of a large amount of money there were 460 cases before the epidemic was checked. As the duration of the most favorable cases, under the most careful treatment, is a matter of months, and many of them inevitably persist for years, the gravity of such an occurrence is manifest.

The treatment recommended by Ravogli² is the ordinary one : iodine, chrysarobin, resorcin, pyrogallol, corrosive sublimate, etc., with epilation, or crude petroleum and olive oil, equal parts. The cataphoretic

¹ Loc. cit., June 29, 1901.

² Loc. cit.

method of H. T. Reynolds is excellent. A sponge electrode attached to the positive pole of the battery is soaked in 1 per cent. bichloride solution, and the current passed through the patch once daily for thirty minutes.

Stellwagon¹ says that in institutions the parasite is usually of the small-spored variety, and very obstinate. He recommends sulphur and naphthol for the extensive cases, chrysarobin and iodine for the smaller patches, and croton oil for the most obstinate ones.

My own experience has been so extensive that a brief account of the method of handling an epidemic of this nature may not be without interest. The examination and prophylactic treatment of the still healthy heads is a most important point ; therefore, the first rule is :

1. Every healthy head is carefully examined by an expert at least once weekly, and every scalp lesion of any kind is at once isolated.

2. Every healthy head is thoroughly scrubbed once a day with 1 to 2000 sublimate in green soap tincture, and then inuncted with 2 per cent. salicylated oil.

3. Two sets of caps (the main source of contagion) are provided. Each night one set is left over night in the steam sterilizer, and fresh caps are distributed every morning. This is done because it is impossible to keep the head coverings separate where there are such numbers of children, or prevent interchange at play.

4. The treatment of affected cases consists of the use of a parasiticide application twice daily, preceded by scrubbing with the sublimate green soap tincture. I have employed a great many different drugs, with results that I am not yet ready to publish ; but certain conclusions already arrived at may be mentioned. I reject iodine, chrysarobin, and other applications that stain the skin and hair and obscure the condition of the scalp. Sublamin, an ethylendiamin sulphate of mercury, equal to bichloride and very penetrating, and employed in strengths of 1 to 750 or 1000, has given, perhaps, the best results ; bichloride itself is a close second.

5. Obstinate localized patches are treated with croton oil one part, olive oil two parts for three days, together with the bichloride green soap washings. When pustulation occurs a 5 per cent. acid ointment is applied ; and when it subsides the regular treatment is reverted to.

6. Epilation being impracticable in such large numbers of extensive cases, it is employed only for isolated patches in special cases. The heads of all the affected children are shaved clean once a week.

7. Once a week the heads under treatment undergo expert inspection, and all apparently cured cases are transferred to the observation

¹ Journal of the American Medical Association, November 23, 1901.

wards, where they remain for three weeks. During that time they are treated, like the healthy heads, with daily bichloride green soap washings and inunctions of 2 per cent. salicylated oil. Three cultures of the hair are made. If at the end of three weeks there is no appearance of disease and the cultures are negative, the case is considered cured, and discharged.

This plan has now (May) been in operation some four months. About 100 cases have been cured, some 10 or 15 being discharged every week. The relapses, that is cases that have been clinically cured and

FIG. 22.

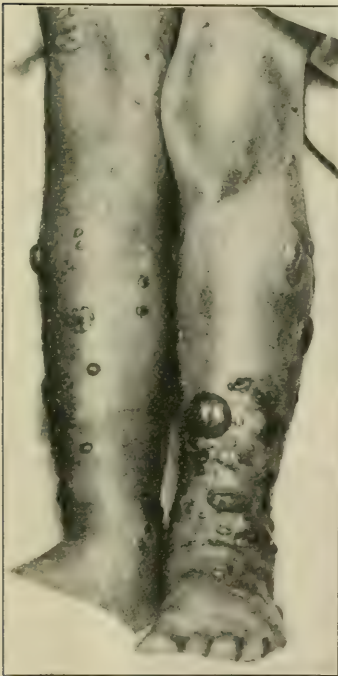


FIG. 23.



Vaccinia generalisata. (Heidingsfeld's case.)

that show a recrudescence of the disease while in the observation wards, are about one in ten. No new cases are developing among the healthy children.

The fact that so large a proportion of apparently cured cases showed persistence of the infection is of prime importance. It explains the difficulty of coping with epidemics of this nature. Under ordinary circumstances they would have been sent at once among the healthy children, and would undoubtedly have caused the development of fresh cases. The value of the bacteriological work is still a question in my

mind ; for some cases apparently permanently cured still give cultures, and others have been made from heads that have apparently never been infected. It is possible that an attenuated form of the parasite may be present universally. These are matters, however, whose consideration transcends the limits here assigned to me.

Vaccination Eruptions. Vaccination rashes were considered at length by Malcolm Morris¹ in the Lane Foundation Lectures at San

FIG. 24.



Bullous dermatitis following vaccination. (J. T. Bowen's case.)

Francisco, in September of last year. He believes that some of them are the consequence of a pure vaccination, but that many are due to the accidental inoculation of other matter. Heidingsfeld,² of Cincinnati, has made a careful study of a generalized case of this kind. The

¹ New York Medical Journal, September 15, 1901.

² Journal of Cutaneous and Genito-Urinary Diseases, February, 1902.

patient was a girl, aged five years, who showed a bullous eruption twenty-two days after a successful vaccination. (Figs. 22 and 23.) The attack lasted some three months altogether, finally affecting the entire surface of the skin, and was accompanied by a mild but persistent pyrexia. Each individual lesion lasted about a week. A blood examination made by Dr. Friedländer showed changes similar to those of the infectious diseases, and differed in the low eosinophilia from what is found in the other bullous eruptions, such as pemphigus, etc. The author agrees with Morris as to the varying nature of these exanthems.

Some of the six cases of bullous eruptions recorded by Bowen¹ are very similar to that of Heidingsfeld. (Fig. 24.) He reports them as cases "following" vaccination, since he cannot prove that they were caused or influenced by it. But their common characteristics show that they belong to a distinct group, closely related in many ways to dermatitis herpetiformis. There is no ground for the assumption that impure vaccine has anything to do with the development of the lesion. It is rather to be regarded as caused by a toxin developed by the vaccination.

SYPHILIS.

Animal Syphilis. Hügel and Holzhauser² have made an additional report on their experiments at the Strasburg Clinic. They injected 10 cubic centimetres of secondary syphilitic blood into four pigs; in two cases there was no result; two others showed erythema, papular eruptions, and an indolent adenopathy. They conclude that the pig is susceptible to syphilis, though the symptoms are less violent than is usual; the virus is evidently weakened, as is the case in many human beings. Goljachowsky³ has examined these investigations and repeated the experiments, with a very different result; there were no eruptions, and no reaction that could be accepted as syphilitic. Similar negative results were obtained by Levi⁴ from his inoculations of syphilitic blood, secretions from mucous patches, etc., on rabbits and monkeys. Neisser,⁵ as the result of extensive experimentation, concludes that the question of transmissibility to animals is yet an open one. This may be the case; but the evidence against it is strong, and is apparently only fortified by time and experience.

Chancre. That chancre is frequently an insignificant lesion is well recognized; but the possibility of the occurrence of syphilis without it

¹ Journal of Cutaneous and Genito-Urinary Diseases, September, 1901.

² PROGRESSIVE MEDICINE, September, 1901.

³ Russische Zeitschrift für Dermatologie und Venerische Krankheiten, vol. i., No. 2.

⁴ Annales de Dermatologie et de Syphiligraphie, November, 1901.

⁵ Archiv für Dermatologie und Syphilis, February, 1902.

(except, of course, in hereditary cases) is a question that is by no means settled. Two clear cases, however, are reported by Jullien,¹ and are of special interest on account of the mode of infection. A surgeon and his assistant, while operating upon a woman suffering from a presternal tubercular tumor, on June 9, 1899, pricked their fingers with the suture needle. The patient was not known to be syphilitic; but on dressing the wound on June 17th all the suture exits were found to be slightly ulcerated. On the next day the patient showed a roseola; and a careful examination revealed a cicatrizing syphiloma of the fourchette and a general adenopathy. On July 5th, twenty-six days after the operation, the surgeon fell sick with fever (102.3° F.) and chilliness, and had to go to bed. On the thirtieth day he had roseola; on July 16th moist papules of the scrotum, mucous patches of the tongue, and arthralgia; on the 26th palmar papules, etc. On the thirtieth day (July 9th) the assistant had fever, and on the thirty-third day roseola, etc. In both cases the sites of the punctured wounds of the fingers remained entirely unchanged.

It is fortunate that these cases have been reported by so well-known and reliable an observer as Jullien; for they are at variance with experience. Local reaction and local adenopathy may be slight, but have been supposed to invariably occur. Syphilitic blood is recognized as infective; Pellizari long ago demonstrated this fact. The precise period when it becomes so, however, is unknown. In this case it was evidently infective even before the advent of the secondary symptoms; for both cases were inoculated nine days before they appeared. The patient had probably had her chancre a month previously. In both of these blood inoculation cases the primary stage was absent; there was no local lesion or adenopathy. Studies of this mode of invasion have been made by Oltramare and by Verchère; but there has never before been a conclusive demonstration of its occurrence.

Mistakes in the diagnosis of the initial lesion of syphilis are not very uncommon; and this is not surprising in view of the difficulty that is sometimes experienced in deciding whether a lesion is a chancre or not. Some years ago, under the title of "Pseudochancre," I published two cases in which a broken-down gumma and a chancroid of the penis respectively simulated an initial lesion very closely. Danlos² showed a woman at the French Society for Dermatology and Syphilis in whom a gumma of the left lower eyelid was mistaken for a chancre. The induration was marked, as also was the local adenopathy. She had had a vulvar chancre three years before, followed by the regular

¹ Presse Médicale, July, 1901.

² Annales de Dermatologie et de Syphiligraphie, May, 1901.

sequele. A case very similar to one of mine is recorded by Moskalew.¹ The case was one of tertiary ulceration of the glands.

In an article on the diagnosis of chancre² I have noted the following points as essential in the diagnosis :

1. The presence of a tumor as the original lesion.
2. The characteristic painlessness and indolence of the lesion.
3. The peculiar stony induration of the nearest lymphatic glands either at the time of the tumor's appearance or a little later.
4. A course of only a few weeks, and this irrespective of whether the diagnosis is made and the disease is treated or not.
5. The appearance of secondary symptoms.

An extremely rare localization of the initial lesion is reported by Dagilaiski³ Infection of the lids is specially common in Russia, in consequence of the habit among the peasantry of "licking" diseased eyes, but it is extremely rare on the conjunctiva. Dagilaiski reports two cases. The seat of the first chancre was at the commisural fold of the lower, of the second at the commisural fold of the upper lid. Each appeared as a lentil-sized ulceration, with very thick and immensely infiltrated walls, and dirty, lardaceous base. The lids and conjunctivæ were œdematous, and the preauricular and retromaxillary glands of the affected sides were greatly swollen.

The Syphilis Organism. Attention was called in last year's review to the claims of von Neissen to have discovered the micro-organic cause of the disease, as also to the fact that such claims have been made periodically for nearly a quarter of a century without in any case being finally substantiated. Johannes Paulson⁴ has found a white diplococcus in the blood in four cases, which he thinks may be identical with von Neissen's organism. He succeeded in cultivating it on gelatin, agar, and potato. Stassano⁵ describes an infusorium of the monad group, motile, round, or oval, and provided with flagellæ, which he has found in the tissue fluid and serum of the swollen inguinal lymph glands of chancre ; he did not succeed, however, in cultivating it or following it up. Vincent⁶ has investigated the fusiform bacillus that has been proclaimed as the etiological factor of the disease by Athanasin, Escat, Letulle, and others, and has found it in many syphilitic lesions, but also in healthy mucosæ ; he, therefore, does not consider it pathogenic.

¹ Russische Zeitschrift für Dermatologie und Venerische Krankheiten, vol. i., No. 1.

² International Medical Magazine, October, 1901.

³ Klinische Monatsblätter für Augenheilkunde, vol. xxxvi. p. 11.

⁴ Dermatologische Zeitschrift, 1901, No. 8.

⁵ Gazette hebdomadaire, 1901, No. 29.

⁶ Presse Médicale, June 1, 1901.

The most elaborate investigations in this field, however, have been made by Justin de Lisle and Louis Jullien.¹ They have found granular refractive bodies endowed with Brownian motion in the blood of non-treated recent syphilitic cases. These have been described by other observers, and the authors do not consider them pathogenic. But they also found a polymorphous bacillus, varying from an "elongated filament" to 5 or 8 microns in length, mobile, and colorable by the ordinary reagents, but not by Gram's method. This they confidently claim to be the long-sought-for organism. They grew it on bouillon, gelatin, and glycerinated potato. Cultures injected into the peritoneum of guinea-pigs caused paralysis, emaciation, abortion, and death in ten to fifteen days. Subcutaneous injection caused the same symptoms, together with loss of hair and the formation of an induration at the site of inoculation, with subsequent ulceration and enlargement of the neighboring lymphatic glands. They conclude that their microbe is found in active syphilis, and not in other cases; that in mammals it causes symptoms comparable to those of syphilis in the human subject; that its cultures have no effect upon syphilitic subjects; that, as in the human subject, the microbes die with the death of the infected animals; and that, as above stated, the organism is the real cause of the luetic disease.

On the other hand, von Neissen² has further described his bacillus,³ but without strengthening his position as to its pathogenicity. Our conclusions upon the whole matter must still be the Scotch verdict of "not proven;" we are apparently as far as ever from the discovery of the syphilitic organism.

Syphilitic Reinfection. A chief argument in favor of the curability of syphilis is the fact that there do occur cases in which an individual goes through two attacks of the disease. The past year has been exceptionally prolific in reports of cases in point. Thus Mraček⁴ had a case that had a chancre seven years before, which he had treated with injections of the *soziodolate* of mercury and iodide of potassium by the mouth. There were no secondary symptoms. Lately he had a second chancre, with a general eruption and adenopathy. In the discussion upon this case Neumann stated that he had personally seen eight reinfection cases, the shortest period between two attacks being two years. Baurowicz⁵ records the case of a man, aged forty years, who had a chancre two months before, and at the time of record had

¹ *Journal des Maladies Cutanées et Syphilitiques*, July, 1901.

² *Beiträge zur Syphilis Forschung*, 1901, Nos. 4 and 5.

³ *PROGRESSIVE MEDICINE*, September, 1901.

⁴ *La Semaine Médicale; Therapeutic Gazette*, July 15, 1901.

⁵ *Archiv für Dermatologie und Syphilis*, July, 1901.

moist papules of the lips and tongue, scaly papules of the palms, and the general adenopathy. In his pharynx were old gummatous scars which Baurowicz regards as absolutely characteristic of acquired disease. A case from Majocchi's clinic is reported by Spagolla,¹ in which a man, aged twenty-four years, had an indurated chancre, inguinal adenopathy, cephalalgia, and roseola, in 1894. He was treated with 140 sublimate injections in three series, during the course of which he showed mucous patches of the anus, tongue, and lips. Four and a half years later, in 1899, he had a preputial chancre, with general adenopathy and a roseola; he was treated with sublimate injections; six months later he had maculo papules of the trunk and limbs, and mucous patches of the lips, tongue, and tonsils. Sukow² saw a case of reinfection eight years after the first attack, with sclerosis, typical glands, exanthem, etc. Laurent³ records a case occurring ten years after the first attack.

Of course, cases like those of Baurowicz are open to doubt, though the author is very positive that the pharyngeal scars were not due to diphtheritic processes or to caustics applied therapeutically, or ingested accidentally or for suicidal purposes. But both Mraček's and Spagolla's cases were treated under expert observation in the clinics for both attacks, and seem to be undoubted reinfections. C. F. Marshall⁴ reviews the entire subject, and concludes that the undoubted cases of reinfection shows that the disease is curable, though a few authorities, like Gower, claim that it is not. The second chancre is often much smaller than the first; but, as the experiences of Mraček and Noble shows, the second attack may be as bad as the first, if the surrounding conditions are the same.

I have recently⁵ had occasion to treat of this subject rather exhaustively, and to point out that those who hold that syphilis is an incurable disease lose sight of some essential facts in the natural history of the disease. A great deal more than half the cases never show any tertiary manifestations at all, and the immense majority of them have healthy offsprings. The common experience of practitioners shows that most cases are cured; otherwise each case of syphilis in family practice would mean lifelong treatment at intervals, at all events. That we cannot in any given case guarantee the patient against any future symptoms of the disease, means nothing at all; we are not in

¹ *Giornale italiano delle malattie venerée e delle pelle*; *Annales de Dermatologie et de Syphiligraphie*, July and August, 1901.

² *Russische Zeitschrift für Dermatologie und Venerische Krankheiten*, vol. i., No. 7.

³ *Independence Médicale*, 1901, No. 12.

⁴ *British Journal of Dermatology*, August, 1901.

⁵ *International Medical Magazine*, October, 1901.

possession of the information which will enable us to say which cases will show late manifestations ; but most of them, properly treated, will not. In fact I go still further, and will reiterate the conclusions with which the article ends :

1. Syphilis is a curable disease, and may even, with restrictions, be called a self-limited one.

2. While the cure of a given case can never be affirmed with scientific accuracy, the chances of its being the fact after a certain time under proper treatment are so great that it may properly be claimed to have been effected.

3. Practically a patient who has been properly treated through the active stages of the disease, and who has had no manifestations of it for several years thereafter, may be regarded as cured, and may be told so.

Syphilis and the Public Health. The first beginnings of a serious attempt to systematically combat the ravages of syphilis have been made on both sides of the Atlantic during the past year. They are of interest to the syphilographer, no matter what opinion he may hold as to their usefulness or even practicability. Fournier¹ holds that effective steps can be taken to prevent its spread, now that we do so much, or attempt to do so much, in the cases of tuberculosis and alcoholism. As the outcome of the Congress on the Prophylaxis of Syphilis, held at Brussels, in 1899, a League for that purpose has been formed at Paris, with Fournier as President ; Berenger, Brissaud, and Le Pileur as Vice-Presidents, and Barthélemy as Secretary. The announcement of the measures that they will recommend is awaited with interest. A committee on the Prophylaxis of Venereal Disease in New York City was appointed by the County Medical Society, and their report was very incomplete, yet it showed that there were probably about 200,000 syphilitics in a population of 3,500,000, and over 2500 heredosyphilitic cases.² It does not seem to me that any very important practical results are likely to flow from these efforts. Syphilis is essentially a disease of concealment, and I cannot but sympathize with the sentiment that leads a patient to hide it from his neighbors and to forget its past occurrence as soon as possible. All attempts to place it in the list of contagious reportable diseases are necessarily doomed to failure from the start. No penalties will make either the sufferers or their medical attendants publish the fact of its occurrence in any given case. The question of the local committee above referred to, though couched in the most general and non-com-

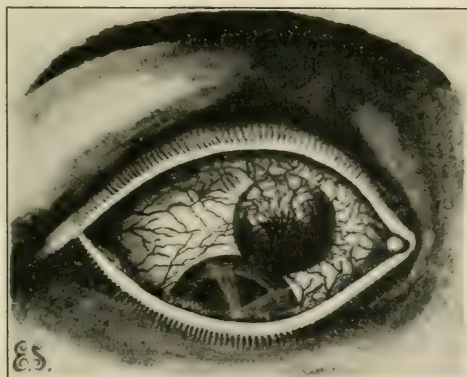
¹ Le Bulletin Médicale ; Monatshefte für praktische Dermatologie, November 15, 1901.

² Medical News, December 15, 1901.

mittal terms, and sent under the authority of a representative medical body of the city, elicited replies in only 20 per cent. of the cases. This clearly shows the attitude of the profession upon the subject. There are only two practical methods of combating syphilis as an endemic. One is the rapid and radical cure of all cases as they occur; and the other is the more general diffusion among the laity of a knowledge of its dangers and the methods of avoiding primary and secondary contagion. All measures in the direction of compulsory reporting of public or private cases, or the compulsory examination or treatment of prostitutes, will surely fail.

Syphilis of the Eye. An interesting case of gumma of the ciliary body is reported by E. Stieren. The patient had tertiary dermal manifestations of lues, and was under vigorous mercurial treatment,

FIG. 25.



Gumma of the ciliary body. (Stieren's case.)

when she developed intense photophobia, extreme ciliary injection, muddiness of the iris, cloudiness of the vitreous, and a large hypopyon. The eye improved under hot fomentations, atropine instillations, and large doses of iodine and calomel. Then there appeared a swelling at the inner upper quadrant of the corneal margin, purplish in color, and 4 mm. in diameter. (Fig. 25.) Light perception only remained, and a little later the cornea became hazy, and hardly any fundus reflex was obtainable. The gumma retrogressed when the iodide dosage reached 150 to 200 grains t. d. Stieren concludes that gumma of the ciliary body or any other eye structure need have no hopeless prognosis, though vision be reduced to light perception and the intraocular tension be materially reduced by the disorganization of the vitreous. The only limit to the amount of iodide of potash required is the retrogression of the symptoms.

Syphilis of the Internal Organs. Under this heading I shall group a number of cases in which the constitutional luetic disease affected the internal organs, most often closely simulating similar affections of non-syphilitic origin.

Late syphilitic fever occurred in a case reported by Campbell Williams,¹ in which there was a regular afternoon rise in temperature in a syphilitic who had been under regular treatment for two years; it was cured by a fresh iodine course. This intermittent fever with intense oscillations resembling tertian ague has been studied by Yeo, Sidney Phillips, and Basset-Smith. Its exact rationale is unknown, but it is certainly not due to any demonstrable local recrudescence of the general disease. It is characteristic in yielding readily to iodide of potash, and it is probable that not a few obscure fevers are examples of its occurrence.

Intermittent fever due to gummatosis of the liver is recorded by Migliorato² in a man, aged sixty-four years, who had had his early syphilis at the age of twenty-three years. There was enlargement, nodulation, and tenderness of the liver, with immediate improvement under calomel injections.

Judin³ calls attention to the resemblance of the early syphilitic fever to that occurring in other infections. A case under his observation had a six weeks' typhoid-like fever, with swelling of the spleen three weeks after his syphilitic exanthem.

A syphilitic pleurisy is recorded by de Dominicis.⁴ The local symptoms were slight, but definite; the progressive cachexia led to a suspicion of cancer; but, though other treatment was useless, mercury cured the affection quickly. Breitmann,⁵ from his own observations and a careful study of the literature, concludes that there is no such thing as primary inflammation of the heart valves in early syphilis; but that gummatous affections spreading from the myocardium do occur in the later stages of the disease. That *acute nephritis* may be caused by the luetic infection is proved by a case of Montgomery's.⁶ The patient was a man, aged forty-nine years, who showed a sudden œdema of the legs, scrotum, and eyelids on the fifty-second day after the appearance of the chancre. The urine was acid, 1022, with 1 gramme of albumin to the litre; there were also pus corpuscles, and hyaline and granular casts. There had been no exposure to cold, no indulgence in alcohol, and no other disease to occasion the nephritis.

¹ Lancet; Journal of Cutaneous and Genito-Urinary Diseases, March, 1901.

² La Settimana medica. vol. lii., No. 48.

³ Russische Zeitschrift für Dermatologie und Venerische Krankheiten, vol. vi., No. 7.

⁴ Atti della R. Accademia med.-chir. di Napoli; Monatshefte für praktische Dermatologie, January 15, 1902.

⁵ Vrach. Journal of the American Medical Association, July 13, 1901.

⁶ Journal of the American Medical Association, May 18, 1901.

The heart and vessels were normal. The affection was cured in ten weeks by the administration of iodide of potassium in fairly large doses. The patient was not taking mercury when the nephritis came on, and has since taken mercury without any nephritis. Montgomery, therefore, rightly concludes that the case was one of syphilitic and not one of mercurial or other nephritis. A precisely similar case is recorded by Stepler.¹

A remarkable case of *syphilitic ulceration of the bladder* is reported by Hinder.² There was frequent micturition and hæmaturia for nine months. The amount of blood varied, and at the end of urination there usually appeared a drop of pure blood. The cystoscope showed a large ulceration $1\frac{1}{2}$ inches behind the right ureteral orifice. The treatment employed did no good at all. There was no syphilitic history; but there were several suspicious scars upon the legs. Iodide of potassium was administered in daily doses of $2\frac{1}{2}$ grammes; in ten days the hæmaturia had diminished, and the ulceration had greatly decreased in size. Cure was complete in a month.

Acute yellow atrophy of the liver, occurring in the course of secondary syphilis and due to the luetic infection, has been described in forty-one cases. Thurnwald³ adds another one to the list. Icterus set in during the inunction cure, followed later by general symptoms, atrophy of the liver, and death in coma. The autopsy showed yellow atrophy of the liver, parenchymatous nephritis, and fatty degeneration and dilatation of the heart.

Syphilis of the Nervous System. This subject has been much written about during the past year, my list containing not less than fourteen articles of importance on it. Treating in a general way of the syphilitic psychoses, Dewey⁴ does not believe that irregular or atypical symptoms, or "bizarerrie," is as characteristic of cerebral syphilis as is usually supposed. He considers remissions of sanity, however, as markedly indicative of the luetic nature of the affection. The somatic symptoms of brain syphilis are thoroughly elucidated by Patrick.⁵ His conclusions are too lengthy to be detailed here; but the most important are:

1. Brain syphilis is most frequent in the first year after infection, and next most frequent in the second year; 50 per cent. of all cases

¹ Wiener klinische Wochenschrift; Archiv für Dermatologie und Syphilis, December, 1901.

² Australasian Medical Gazette; Archiv für Dermatologie und Syphilis, February, 1901.

³ Wiener medicinische Woch.; Monatshefte für praktische Dermatologie, January 15, 1902.

⁴ Journal of the American Medical Association, October 26, 1901.

⁵ Ibid.

occur in the first three years, and after ten years its occurrence is exceptional.

2. It is most commonly a syphilitic arteritis, and next in frequency a syphilitic meningitis with specific infiltration of the cranial nerves; gumma is the least frequent.

3. Paralyzes from brain syphilis (excluding paralysis of the cranial nerves) are oftenest due to thrombosis from arteritis, not to gumma or hemorrhage, and, when fully developed, are not more amenable to treatment than when due to ordinary arterio-sclerosis or atheroma. It is in the very early stages, when only the prodromal symptoms are present, that treatment is brilliant and almost miraculous.

4. Lack of type is so marked a characteristic that any case presenting an odd mixture of somatic and psychic symptoms, or a bizarre appearance and disappearance of them, is suspicious. Insomnia, somnolence, or alterations of them; pain or anæsthesia; painful anæsthesia; spasm, paralysis, or both; monoplegia, paraplegia, hemiplegia, crossed paralysis, single or multiple cranial nerve paralysis, give a hodgepodge of symptoms and partial manifestations.

5. Headache is present in 75 per cent. of the cases; it is usually nocturnal, but may be vesperal, or even markedly diurnal. Its localization is unimportant.

6. Transient attacks are common. Every sort of fit, from the mildest to the most tumultuous, occurs; dizziness, syncope, momentary unconsciousness (like *petit mal*), localized numbness or tingling, spasms, apoplectiform or epileptiform convulsions; all are seen. 7. Cranial paralysis is frequent and striking, the eye nerves being most often affected; 90 per cent. of all ocular paralyzes are syphilitic. Atypical change in the visual field, sudden blindness without changes of the fundus, paræsthesiæ or pains in the distribution of the fifth nerve, tinnitus, dizziness, and aural vertigo, with the well-known affections of the third nerve, are common signs of the disease.

7. Spinal cord symptoms are not uncommon.

8. Progression of the disease by fits and starts, as successive vascular twigs are involved, is a notable feature.

9. Peculiar stupor or partial stupor is frequent, and when present in combination with some of the other symptoms adverted to above is, in the author's opinion, almost pathognomonic.

I have devoted a good deal of space to the consideration of Patrick's article, since the subject has special importance, because in their early stages, at the time when these cases are specially amenable to treatment, they are usually still in the hands of the general practitioner. Langdon, in the same journal, generally agrees with Patrick in his conclusions, paying more attention, however, to the pathology of cerebral lues.

The dependence of general paralysis upon syphilis, though very largely believed in, is not considered proved by Sérieux and Farnarier.¹ On the basis of their numerous examinations at the Ville-Evrard and Ville-Juif Asylums, they conclude that syphilis only has a predisposing action and that general paralysis cannot be considered a luetic affection. In the discussion on their paper at the Société Médicale des Hôpitaux de Paris, Joffroy stated that it was exceptional to see general paralysis in brains that had gross syphilitic lesions.

Epileptiform attacks as a symptom of cerebral syphilis have been mentioned above. Salomone² records a case that had syphilis in 1899. A series of prodromal symptoms indicating a cerebral localization of the disease, such as nocturnal headache, roaring in the ears, difficulty of hearing, and slight asymmetry of the face was followed by a first epileptic attack. Mixed treatment cured the case, and the epilepsy did not return.

Hoffmann³ relates a case in which the syphilitic meningitis was very precocious, coming on four and one-half months after the chancre, and three and one-half months after the roseola. There was complete paralysis of the right facial and right abducens, weakness of the right hypoglossus, sensory disturbance of the right side of the tongue, with severe headache and bilateral choked disk. There was almost complete recovery from inunctions and bichloride injections energetically used.

As regards the prognosis of these cases of cerebral syphilis, Kosslin⁴ says that it depends less upon the severity of the symptoms than upon the anatomical character of the lesion. Where there is diffuse atheroma leading to thromboses and softening, treatment is unavailing; and the prospects are better in specific arteritis and in gumma.

But little that is new is to be said in regard to their treatment. Mendel⁵ relates the brilliant results obtained from intramuscular injections of the 10 per cent. mercury-salicylate-paraffin solution. I have long advocated this method as the routine treatment, and it is practically the only one that I employ.⁶ Schachmann⁷ has employed epidural mercurial injections in four recalcitrant cases of spinal syphilis with

¹ *Annales de Dermatologie et de Syphiligraphie*, July and August, 1901.

² *Annali de Medicina Navale*; *Medical Record*, August 10, 1901.

³ *Berliner klinische Wochenschrift*; *American Medicine*, May 4, 1901.

⁴ *Deutsches Archiv für klinische Medizin*; *Monatshefte für praktische Dermatologie*, November 15, 1901.

⁵ *Münchener medicinische Wochenschrift*; *Monatshefte für praktische Dermatologie*, January 15, 1902.

⁶ *Syphilis: Its Diagnosis and Treatment*, Chicago, 1901.

⁷ *Bulletin de la Société médicale des Hôpitaux de Paris*; *Journal of the American Medical Association*, December 7, 1901.

excellent results. One was a case of myelitis which did not react to vigorous mercurial treatment of the ordinary kinds, and which, after twenty-three epidural injections in twenty-five days, could get out of bed and walk alone without looking at his feet. The first injection caused restlessness, slight fever, and insomnia; but these completely disappeared after the fifth treatment. The amount usually employed was 1 cubic centimetre of a 1 per cent. solution of the benzoate of mercury, the needle being inserted into the opening of the last sacral vertebra. Schachmann considers these injections harmless, and recommends their use when other methods fail. I should hesitate to employ them, however, until further experience has demonstrated their desirability.

In this connection it is worth noting that great benefit has been gotten in several cases of severe syphilitic cephalalgia from lumbar puncture.¹ A small amount of fluid only was withdrawn. This would serve to confirm the opinion which I have long held, that in many cases the headache is a true meningeal symptom, and that the inflammation is accompanied by hypersecretion of the cerebro-spinal fluid.

Heredo-syphilis. A good deal of important work has been done during the year on this subject. Jullien² has made a collective investigation of heredo-syphilitics and their descendants. He finds, as was to be expected, that pregnancies are comparatively few, and abortions relatively very numerous. In 250 pregnancies of such parents there were 20 stillbirths. Some few of the children showed marked syphilitic symptoms, such as maculo-papular exanthems, destructive syphilomata, and brain and eye diseases that could be attributed to the hereditary infection. More frequent, however, were the so-called parasyphilitic diseases, such as meningitis, rachitis, tuberculosis, encephalopathies, etc. Lessened resistance to infantile diseases, deficient growth, late walking, malformations, and monstrosities (deformed teeth, harelip, etc.).

In reviewing the above Ogilvie makes some pertinent remarks. Jullien's 45 observations were contributed almost entirely by non-syphilographers, the noted names in this field being almost entirely absent. What the French writers call parasyphilis is a variegated medley of all sorts of pathological conditions, from abortion and dwarfism to giantism, from dental erosions to hysteria, from club-foot and cleft palate to tubercular disease. Many of them are the result of chronic intoxications as alcoholism, or acute infectious diseases. Finally, most of the cases come from France, a country where other and well-recognized influences hinder individual and race progression.

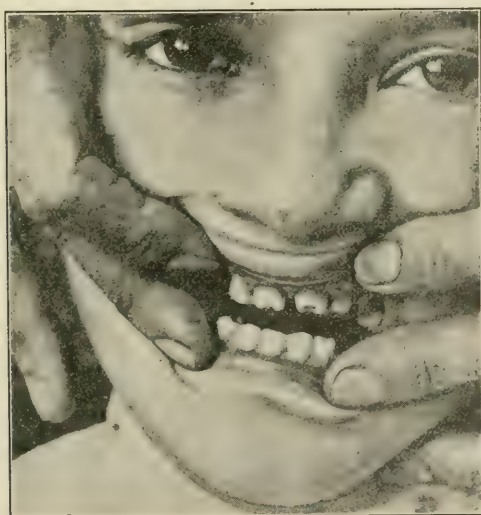
¹ Bulletin médicale de Quebec; Journal of the American Medical Association, March 20, 1902.

² British Journal of Dermatology, June 1901.

One from a Russian source, however, is reported by Katz,¹ in which a girl, aged twenty-two years, was affected with child speech (a symptom to which Fournier has called attention) and an atrophic affection of the eye. She was cured by injections of mercury salicylate. The diffuse, smooth red, infiltration of the palms and soles to which Hochsinger² calls attention is a common and for me pathognomonic sign of the hereditary syphilis that we see here. It seems to be rarer in Europe, for Kaposi³ also makes it the subject of especial study.

Legendre⁴ notes a paroxysmal hæmoglobinuria in a heredo-syphilitic, in which each attack was cured by mercurial inunctions and the iodide

FIG. 26.



Hutchinsonian teeth. (Pospelow's case.)

of potassium. A curious observation is that of Lemonnier,⁵ in which an infant had marked hereditary infection during its first year, cured by inunctions. At the age of seven years she began to get thin, had polydipsia (5 litres daily), polyuria, glycosuria, and showed a greatly enlarged liver. The treatment was inunctions and 1 to $1\frac{1}{2}$ grammes of potassic iodide daily; after two months the liver was less in size,

¹ Vrach ; Dermatologisches Centralblatt, June, 1901.

² Archiv für Dermatologie und Syphilis, February, 1902.

³ Ibid., June, 1901.

⁴ Journal des Praticiens ; Monatshefte für praktische Dermatologie, November 15, 1901.

⁵ Archives de médecine des enfants ; Annales de Dermatologie et de Syphiligraphie, July and August, 1901.

the urine $2\frac{1}{2}$ litres daily, thirst less, and appetite better. Two months later the polyuria and glycosuria had disappeared.

Some discredit has latterly been thrown upon the three signs of heredo-syphilis to which Hutchinson first called attention. This is occasioned, I believe, by the fact that inexact observation has led to the inclusion of other conditions non-syphilitic in origin. When two or more of the triad, the teeth, the interstitial keratitis, and the defect of hearing, coexist, I believe it to be a very reliable sign of hereditary infection. The teeth more especially are pathognomonic when they are really the variety described by Hutchinson. But I have seen many dental deformities called Hutchinsonian teeth that were nothing of the kind at all. Pospelow¹ is of the same opinion, and gives an excellent illustration of them. (Fig. 26.) The deformity affects the two central upper incisors of the permanent teeth, which are peg-top shaped, set apart, and deeply notched on their anterior lower margins with a crescentic excavation. Deformities of the other teeth, or of the milk teeth, or malpositions, ridgings, etc., are not the lesions that are pathognomonic.

¹ Archiv für Dermatologie und Syphilis, 1901, No. 2.

DISEASES OF THE NERVOUS SYSTEM.

BY WILLIAM G. SPILLER, M.D.

DISEASES OF THE BRAIN.

Brain Tumor. An interesting discussion on brain tumor has recently been held in the New York Neurological Society. M. Allen Starr said he had observed 25 cases of brain tumor in the past six years ; 15 of the patients were males, and 10 were females. All ages appeared to be about equally liable. The average duration of the disease has been about eleven months, which was a much shorter period than that usually stated. The tumors had been distinctly located in 15 cases, and it had been possible to operate in 4 cases. No diagnosis of tumor whatever had been possible in 2 cases. One of these was a patient with symptoms of insanity. There was a history of chronic alcoholism, some headache and morning vomiting, great mental irritability, and imperfect memory. At times the patient was very violent with his family, though perfectly quiet in the presence of others. On two occasions he had had sudden attacks of coma lasting about half an hour. Death was sudden. A large tumor was found occupying the left superior parietal convolution. In the other case several physicians had made a diagnosis of bulbar paralysis. There was neither optic neuritis nor headache. A small tumor was found in the medulla oblongata. No localization had been possible in 8 out of his 25 cases. In 19 an operation had been absolutely impossible, either because of the absence of a diagnosis or because the tumor was inaccessible. Operation in 2 cases had been successful in that the tumor had been found, but 1 of these patients had died. There had been only 1 patient out of 25 who had recovered. In 1 case astereognosis had been considered the most important symptom of localization, and consequently the parietal region had been freely exposed, but no tumor had been found. In a summary of cases of brain tumor made by Starr in 1896 it had been shown that about 7 per cent. are operable, and that of the cases operated upon about one-third recover from the operation. These earlier statistics had been made up from a large number of cases of different operators, and had not been from Starr's records alone.

Joseph Collins remarked that statistics seemed to show that about 7 per cent. to 10 per cent. of cases of brain tumor were operable, but

when the cases were carefully studied it was found that about 3 or 4 per cent. were operable. In his own experience but 1 case had been successfully operated upon, although operation had been many times undertaken. Dr. Bramwell, of Edinburgh, had contended that his own very large experience had utterly failed to confirm the statistics given by others regarding the operability of brain tumors.

Discouraging as these statements are, most physicians agree with Starr that it is right to operate in every case in which the tumor can be localized and is accessible, because the choice is usually between death within a comparatively short time and the chance of arresting the progress of the disease and prolonging life.¹

TUMORS OF THE FRONTAL LOBE. The diagnosis of tumor of the frontal lobe receives very careful study from E. Müller.² He believes that the mental symptoms observed in such cases are not focal symptoms of frontal lobe lesion, and, although they may be observed early, they are general symptoms. A tumor in the posterior cranial fossa soon causes death, because of its relation to vital centres; whereas a tumor of the frontal lobe, being so far removed from the medulla oblongata, is not so rapidly fatal, and may cause intense diffuse injury of the cerebral cortex, the clinical expression of which is mental disturbance. This explanation, after all, is not of very great importance. If frontal tumors do cause mental symptoms more than tumors of other regions, it becomes of secondary importance whether these are focal or general symptoms. The tendency to jocosity seen in frontal tumors is explained by Müller in the same way, viz.: that frontal tumors cause symptoms of longer duration. It is more common in tumor of the right frontal lobe because a tumor of the left frontal lobe causes aphasia after it has reached a certain size. Müller's explanation is not altogether satisfactory.

A curious and important case of symmetrical softening of the frontal lobe of each cerebral hemisphere is reported by Zacher.³ On each side the lesion was confined to the anterior half of the frontal lobe, and as the rest of the brain showed no very perceptible alteration the case was an important one for the determination of the function of the frontal lobe, especially as the patient lived sufficiently long for "symptoms at distance" to disappear. The persisting symptoms were mental, and were such as impaired attention and forgetfulness. The man, aged fifty-four years, was unable to remember from one hour to the next, although he noticed what was going on about him, and recognized his wife and others, and replied correctly to questions not

¹ Journal of Nervous and Mental Disease, April, 1902, p. 224.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 3 and 4, p. 178.

³ Neurologisches Centralblatt, December 1, 1901, p. 1074.

demanding any effort of memory for recent events. His memory for remote events appeared to be good. He seemed to have no appreciation of time, or of his condition, and his mental powers were soon exhausted. Unpleasant traits of character supposed to develop in frontal lesions were not present in this case. Such was the condition caused by bilateral lesion of the frontal lobe.

Pronounced bilateral optic neuritis complicated by hemorrhages in the papilla and retina was also present in this case, but no satisfactory cause could be found for this, and it could hardly have been produced by the cerebral softening. At first cerebral tumor was suspected. It does not seem probable that opening the skull would have been of any benefit in this case, even in influencing the course of the optic neuritis, and it was well that the operation was not attempted.

That the frontal lobe is not a "silent" region is shown in the report of a case of frontal tumor by Elder and Miles. The important symptoms which pointed to tumor were the gradual onset and the apparent steady progress of the disease from the time that the patient gave up work, about a month before admission to the hospital. These symptoms seemed to indicate a gradual increase of intracranial tension. The markedly dull cerebration, with depression of spirits, together with the slowness of the pulse and the attacks of vomiting without apparent cause, were regarded as suggestive of increased intracranial tension. Headache was present. The usual ocular symptoms of brain tumor were absent, but only one eye could be examined, and that was on the opposite side from the lesion. The good eye showed blurring of the edges of the disk and some dilatation of the veins. Slight paresis of the right arm, more distinct paresis of the right side of the lower part of the face, with dysarthria, but no aphasia, pointed to a lesion of the left side of the brain. A slight but distinct swelling over the left frontal eminence, painful to pressure and slightly soft in the centre, external to the bone, was regarded as specific in character and possibly as associated with a gumma on the internal surface of the skull, which, however, was not the case. The mental symptoms alone were thought sufficient to justify an operation over the left frontal region. The symptoms were described as a loss or depression of the inhibitory power of the individual; but they were difficult to analyze. The absence of such symptoms renders a man what he is, gives a man his distinctive character in relation both to the lower creation and to his fellow-man—the presence of such symptoms alters the *ego* of a man, takes away his special mental characteristics, and reduces him to a lower level. The most prominent symptom was the loss or diminution of the faculty of attention. The man had lost the power of forming a judgment about anything. He could not compare or

contrast two things or ideas. He forgot what happened almost immediately.

The tumor was operated upon and removed. It was found in the tip of the left frontal lobe, and was two inches long, by one and one-half inches broad and one and a quarter inches in thickness. It was a syphiloma. The removal of the tumor was followed by a rapid disappearance of the depressed condition of the patient, and the only mental symptom noticed since the operation was what the authors regard as evidence of good cerebration, viz. : "witticism." Jastrowitz and Oppenheim have pointed out that "hilarity" and "witticism" are accompaniments of frontal tumor, but Elder and Miles¹ think they are such only before intracranial pressure becomes too great. These symptoms, they say, are probably explained by slight injury to some of the structures concerned in voluntary inhibition. The condition is allied to that seen after administration of a moderate amount of alcohol, the result of the alcohol being, according to some authorities, the reduction of inhibitory control. This case is exceedingly instructive, especially as it shows that there may be a tendency to underestimate the importance of symptoms of lesion of the frontal lobe.

Although the belief is held by many that the frontal lobes are the chief seat of intellectual processes, perhaps emphasis has not been sufficiently laid on the greater importance of the left frontal lobe as compared with the right.

In the report of a truly remarkable series of cases Charles Phelps² has given a valuable contribution to cerebral localization. He says that in every instance but two in which consciousness was retained or regained, and the mental faculties were not perverted by general delirium, laceration involving the left frontal lobe was attended by default of intellectual control, and the lesion was usually, if not always, of the prefrontal region, and implicated either its superior or inferior surface. Subcortical disintegration, or deep or extensive laceration of the cortex, was specially characterized by abrogation of mental power, and superficial laceration by aberration in its manifestations. The two exceptional cases referred to may be disregarded, as they seem to have had little bearing on the question at issue. The abrogation of mental power in consequence of injury of the left frontal lobe seemed to be proportionate to the extent of the lesion rather than to its situation in the prefrontal region. In every instance in which laceration was confined to the right frontal lobe the mental faculties were unaffected, except as they were obscured by stupor or delirium occasioned by coincident general lesion. Compression or contusion of the left frontal

¹ *Lancet*, February 8, 1902, p. 363.

² *American Journal of the Medical Sciences*, April, 1902, p. 563.

lobe only exceptionally produced specific intellectual disturbance. These generalizations were based upon an examination of an entire series of 295 cases in which the history was supplemented by necropsy, and, therefore, the report is a most remarkable and a most valuable contribution to cerebral localization.

MOTOR AND SENSORY REGIONS OF THE BRAIN SHOWN BY TUMORS. C. K. Mills¹ has recently brought forward certain cases to prove the position he holds. He believes in the separate localization in the cortex and subcortex of the cerebrum of the representation of movements and of muscular and cutaneous sensibility, and does believe that the Rolandic and adjacent regions are sensorimotor, as has been held by Munk, Hitzig, Bastian, Dana, Starr, Dejerine, and others. The motor zone includes only the precentral, postcentral, and the caudal extremities of the first, second, and third frontal convolutions, and the anterior fourth of the superior parietal convolution as usually represented; and a separate and extensive sensory zone exists, which includes the gyrus fornicatus, precuneus, and postparietal convolutions, possibly also the hippocampal convolution as held by Ferrier. With regard to the inferior parietal convolution, Mills believes the evidence is not so conclusive as for the other gyri included by him in the sensory zone. The arguments he offers in support of his views are based largely on cases of tumor. The questions he brings forward are extremely difficult of solution, and the long discussion following his remarks throws little light on the subject, as it is mostly a statement of opinion—by eminent men, it is true—but still, a statement of opinion and not a presentation of facts, by which alone solution of the problem is to be obtained.

Bouchaud² reports a very interesting case. The anterior extremity of the left temporal lobe and the left hippocampal region were completely destroyed, and the corresponding parts of the right cerebral hemisphere were also much diseased. These lesions were of long-standing and should have caused a loss of the senses of taste and smell, according to the teaching of many. Such functional disturbances were not present. The patient showed by his behavior at the table that he both tasted and smelled his food.

There seemed to be no disturbance of general or special sensation, and Bouchaud, therefore, concludes that the hippocampal region is not in any sense a sensory area, contrary to the opinion held by many.

RÖNTGEN RAYS IN THE DIAGNOSIS OF BRAIN TUMOR. The case of brain tumor reported by Mills and Pfahler³ is of interest chiefly

¹ *Journal of Nervous and Mental Disease*, November, 1901, p. 595.

² *Revue Neurologique*, February 15, 1902, p. 119.

³ *Philadelphia Medical Journal*, February 8, 1902, p. 268.

because the tumor was located by means of the Röntgen rays during the life of the patient.

The clinical signs permitted a very accurate localization, and the shadow obtained indicated the existence of a new-growth exactly in the region where, from the symptoms, it was supposed to be present. An operation for removal was attempted, but the tumor was so large that it could not be dislodged, and the patient died shortly after she was removed from the table. Once before a tumor has been localized by the X-rays during the life of the patient—by Church and Fuchs—but in other cases the attempt has been unsuccessful, although experimentally a tumor placed within the brain of a cadaver has been detected by means of these rays. The tumor in the case of Mills and Pfahler was a hard one, and this possibly may have rendered it more capable of causing a shadow. Pfahler has performed a number of experiments which are very suggestive in regard to the use of the X-rays in cases of cerebral tumors and even of other lesions.

JACKSONIAN EPILEPSY WITH BRAIN TUMOR. Raymond,¹ of Paris, believes that Jacksonian epilepsy may occur from a lesion of the frontal lobe, the pons, or medulla oblongata, etc., as well as from a lesion of the Rolandic area; and that this symptom by itself is not sufficient for a diagnosis of intracranial neoplasm. Jacksonian epilepsy alone would certainly be insufficient for a diagnosis of brain tumor, but the sign has great value—which Raymond probably does not mean to deny—and in the majority of cases is indicative of lesion in the cortical motor area. It is very desirable that cases in which Jacksonian epilepsy was caused by a lesion at the base of the brain should be put on record.

TUMOR OF THE SUPERIOR PARIETAL LOBE AND ASTEREOGNOSIS. A case published by Teller and Dercum² is strong evidence that a lesion of the superior parietal lobe may cause astereognosis—*i. e.*, the inability to recognize objects by contact when the eyes are closed. Their patient, a man, aged twenty years, was struck on the head by a baseball bat. He had an extensive depression in the left superior parietal region, posterior to the motor area, and the latter was probably very slightly implicated, as the resulting terminal hemiplegia was exceedingly slight. Astereognosis was the most striking feature of the case. With eyes closed the patient failed to recognize any object placed in the right hand. The objects used were a spool, thimble, ring, ball, cubical block of wood, and a penknife. Slight hypæsthesia to pin-points, loss of the spacing sense, loss of the sense of location, hypalgesia and diminution of the pressure sense in the right wrist, hand, and especially the fingers were observed. The perception of heat and cold was preserved, except

¹ *La Semaine Méd.*, November 27, 1901, No. 49, p. 389.

² *Journal of Nervous and Mental Disease*, August, 1901, p. 459.

that the responses were somewhat slow and the acuteness of perception slightly diminished. The knowledge of the position of the fingers in the right hand was also greatly impaired.

This case recalls the one of brain tumor reported by C. K. Mills and referred to by me in *PROGRESSIVE MEDICINE*. We have much evidence that a lesion of the superior parietal lobe may cause astereognosis, but I do not think that we have sufficient evidence that a lesion in some other part of the cortex cannot cause it.

TUMOR OF THE CORPUS CALLOSUM. Putnam and Williams say that tumors involving the corpus callosum may cause clinical manifestations like those of functional psychoses of various sorts and especially like those of general paresis. Many of the symptoms of tumor of the corpus callosum are caused by implication of neighboring parts of the brain, and possibly the only symptoms attributable to the injury of the corpus callosum itself—in the opinion of these writers—are the mental changes. The first case reported by Putnam and Williams was one of tumor beneath the corpus callosum and was of special interest, because a well-marked optic neuritis developed when optic atrophy had been for some time complete, and in this respect the case was almost unique. In their second case the point of greatest interest was the early appearance of slight changes in character and slight impairment of mental power and of memory, coming at a time when neither signs of focal lesions nor of general pressure had been observed. The very early occurrence of isolated epileptic seizures was considered noteworthy, because, although it is not easy to explain them, the histories of several other cases contain similar incidents. The tumor was found in the frontal lobes, corpus callosum, and adjacent parts. In the third case of tumor of the corpus callosum the damage to the brain mechanism revealed itself first through disturbed mental action. Both legs and one arm were said to have become weak or awkward without any great involvement of the other arm. The involvement of the lower limbs was supposed to have been from pressure on the paracentral lobules.

This paper by Putnam and Williams¹ contains an analysis of 38 cases of tumor implicating the corpus callosum, and is a careful study of the symptoms produced by tumor in this portion of the brain.

TUMOR OF THE CORPORA QUADRIGEMINA. Gordinier² has observed a case of brain tumor in which the important clinical signs were double optic neuritis passing on to atrophy, intense and continuous headache, vomiting, dizziness, slow cerebration, and gradual loss of memory. Focal symptoms were internal ophthalmoplegia and double incomplete

¹ *Journal of Nervous and Mental Disease*, December, 1901, p. 645.

² *Ibid.*, October, 1901, p. 543.

external ophthalmoplegia, a marked cerebellar gait, a coarse tremor of the hands, and ataxia in the left leg. The diagnosis of tumor in the region of the corpora quadrigemina was made. Nystagmus and the coarse intention tremor of the hands suggested the possibility of an aberrant form of multiple sclerosis, but the severe headache, the optic neuritis, the ophthalmoplegia, and the cerebellar gait, together with the absence of scanning speech, epileptiform attacks, and of evidence of motor-tract involvement made such a diagnosis improbable, and yet the possibility of this disease being present could not be denied, as headache, optic neuritis, ophthalmoplegia, and cerebellar gait may be symptoms of disseminated sclerosis, even without more characteristic signs. I have seen ophthalmoplegia develop in this disease. At the necropsy in Gordinier's case, a tumor, a neuroglioma, was found. It had its origin in the ventral part of the superior worm, and extended into the corpora quadrigemina, implicating the nuclei of the oculomotor and trochlear nerves and the superior cerebellar peduncles. The symptoms are not difficult to explain in the light of these findings, and the case shows that it may be impossible to determine by the clinical picture whether a tumor commences in the vermis or in the corpora quadrigemina.

TUMOR OF THE FOURTH VENTRICLE. Becker's¹ case of brain tumor was remarkable in many ways. The symptoms began suddenly, with vomiting and vertigo without headache, although headache was experienced after a time, and later all the cranial nerves became implicated. Unilateral primary optic nerve atrophy—*i. e.*, without previous choked disk, was present. Antisymphilitic treatment caused improvement. No wonder that a diffuse process was diagnosticated; that multiple neuritis of the cranial nerves was thought of; but a glioma of the fourth ventricle was found at the necropsy. The symptoms were the result of pressure, and partly of direct implication of nuclei and nerve roots by the tumor. Choked disks were absent, although the tumor had caused much dilatation of the fourth ventricle, and this absence is hard to explain if we hold that choked disk is invariably caused by increased intracranial pressure. Improvement in a case of glioma of the brain from antisymphilitic treatment is so well known that we need not dwell upon this aspect of the case.

Becker finds that degeneration of anterior and posterior spinal roots occurs in cases of cerebral tumor, hydrocephalus, arterio-sclerosis, Graves' disease, pernicious anæmia, nephritis, carcinoma, cachexia, and tuberculosis. The degeneration is most intense in the lumbar region, and least in the thoracic region, and usually the posterior roots are

¹ Archiv f. Psychiatrie, vol. xxxv., No. 2, p. 492.

more diseased than the anterior. There is no close relation between this degeneration and increased intracranial pressure, and, according to Becker, the degeneration is more probably the result of chemical action—a view which is strengthened by the occasional absence of choked disk when increased intracranial pressure is present.

TUMOR OF THE CEREBRAL DURA. In the case of periendothelioma of the dura mater, reported by D. R. Brower and H. G. Wells,¹ most of the cranial nerves on the left side were found to be involved. There was paralysis of the motor and sensory branches of the trigeminal; of the abducent, manifested by strabismus, diplopia, and dizziness; of the facial, the muscles innervated by the nerve showing the reaction of degeneration; of the auditory, with complete loss of hearing; of the glossopharyngeal, shown by posterior ageusia; of the pneumogastric and spinal accessory, shown by cough, disturbed respiration, disturbed heart action, alterations in the voice, gastralgia, and difficulty in swallowing; of the hypoglossal, shown by hemiparalysis and atrophy of the tongue. The symptoms began in May, 1882, and as the disease progressed, atrophy of the left sternocleidomastoideus and of the upper part of the trapezius was noticed. The diagnosis of meningeal tumor was made, partly because the symptoms were unilateral until death. Pressure symptoms were not manifest at any time, and repeated examinations revealed nothing abnormal in the optic fundus. The period of quiescence in this case was long, for, beginning with 1890, the patient was shown every year by Brower in his clinic until her death, and the symptoms showed no progression. During the life of the patient the tumor was supposed to be syphilitic in nature, because of numerous miscarriages, marked arterial degeneration, and glandular enlargements, and because of the benefit derived from the use of antisiphilitic remedies; the case, however, shows how easily one may be mistaken in a diagnosis of syphilis of the nervous system. At the necropsy a tumor was found in the left posterior fossa. It had invaded the petrous bone anteriorly as far as the foramen lacerum medium, and posteriorly extended to the margin of the foramen magnum.

CARCINOMA OF THE BRAIN. Oppenheim has supposed that cerebral symptoms developing in cases of carcinoma are the result of toxic conditions. This view Alfred Sänger² does not fully accept, and he doubts whether the theory of toxic products exerting an influence only on a certain portion of the brain can be accepted as a correct explanation. He believes that careful microscopical examination in these cases would reveal definite lesions, as it did in a case of his own in which carcinoma cells were found in the cerebral pia. Primary carci-

¹ American Journal of the Medical Sciences July, 1901, p. 32.

² Neurologisches Centralblatt, December 1, 1901, No. 23, p. 1086.

noma of the brain is very rare ; secondary carcinoma is more common.

Sänger acknowledges that symptoms such as coma or dementia—*i. e.*, symptoms indicative of general implication of the brain—may be of toxic origin; but focal symptoms without gross findings are probably due to microscopic accumulations of carcinoma cells in the membranes or brain, or to changes undetectable by our present means of examination.

CEREBELLAR TUMOR. J. Babinski,¹ at the meeting of the Neurological Society of Paris, February 7, 1901, presented a case of hemiasynergy and hemi-tremor of pontile-cerebellar origin. His patient was a man, aged fifty-four years, who had had disturbances of motion about two years. The face was paralyzed on the right side. The right limbs were not contracted and not paralyzed, and the tendon reflexes were equal on the two sides of the body. An intention tremor was observed in the right upper limb. This tremor was present when the patient was sitting with his hand on the thigh—*i. e.*, when apparently he was in repose, but in this position the repose was not complete. When the patient was lying down the tremor ceased entirely. The movements of the lower limb were very peculiar; they were not ataxic, and closing the eyes had no effect upon them, and the “muscular sense” was well preserved. There was a disturbance of association of the movements of this limb—an asynergy. If the man were lying flat on his back and the thigh were flexed on the abdomen, and the leg on the thigh, in extending the limb he extended first the leg on the thigh, and then extended the thigh on the abdomen, instead of extending both leg and thigh at the same time. A necropsy was obtained in this case, and a cholesteatoma was found on the right side of the pons. Babinski concludes that there is a symptom-complex consisting of disturbances of motion on one side of the body. In the upper limb the disturbance appears as a tremor, but in the lower limb as a disassociation of movement. This symptom-complex is caused by a cerebellar or pontile-cerebellar lesion on the same side as the motor disturbances.

A. Vigouroux and M. Laignel-Lavastine² have reported a case in support of these statements of Babinski. In their case a hemorrhagic cyst was found in the cerebellar lobe on the same side as the motor disturbances.

A tumor of the brain sometimes causes few of the symptoms believed to indicate the existence of such a growth. In a case referred to above, reported by J. Babinski,³ headache and vomiting had never

¹ *Revue Neurologique*, 1901, No. 5, p. 260, and 1901, No. 8, p. 422.

² *Ibid.*, 1902, No. 3, p. 131.

³ *Ibid.*, 1901, No. 5, p. 260, and 1901, No. 8, p. 422.

been present, and the optic disks were normal. The lesion was supposed to be inflammatory or vascular; but at the necropsy, made about one month after the first report of the case, a cholesteatoma was found on one side of the pons, medulla oblongata, and cerebellum.

The cerebellum is a very important organ of co-ordination, but it may be injured and yet little clinical evidence of this alteration be manifest. This is especially true if the lesion is congenital or of slow development. I have discussed this subject in a paper published in collaboration with W. E. Robertson and W. S. Wadsworth,¹ and we have reported three cases in which the cerebellum was abnormal, but the alteration had caused no symptoms sufficiently characteristic to permit a diagnosis of cerebellar lesions during life.

In a case of tumor of the cerebellum observed by Marchand the only symptom of the growth was epileptic convulsions. These attacks began when the patient was thirty years of age, and lasted until he was thirty-eight, at which time death occurred. A sarcoma was found compressing the medulla oblongata and pons. Anglade² remarked that he also had observed a case of cerebral tumor in which the only symptom was an attack of general convulsions. The patient did not have vomiting, vertigo, or headache. These cases show the difficulties of diagnosis, but they will be more valuable when reported more in detail.

G. W. Jacoby's³ case shows what a number of other cases have shown, viz.: that extensive destruction of the cerebellum may cause few clinical signs. His patient complained of dizziness at first, especially in the morning; she felt as though the room were turning around, but she had no difficulty in walking. The attacks of dizziness increased in frequency and intensity, and she was obliged to take to her bed. During the following two or three weeks nausea and vomiting occurred, and always followed movements of the head, never taking place when she was at perfect rest. She complained of general weakness, appeared to be emaciating, and showed numerous manifestations of hysteria. Later she complained of intense headache not definitely localized. The eyes were carefully and repeatedly examined, and the fundus, muscles, and visual fields were always found normal. Her gait, even as late as a few days before death, was not ataxic. The important symptoms of organic disease in this case were headache, vomiting, and vertigo; but distinctive cerebellar symptoms, such as nystagmus and ataxic gait, were not observed. One could hardly have made a positive diagnosis of cerebellar lesion; indeed, he could hardly have done more than have diagnosed some intracranial lesion of uncer-

¹ University of Pennsylvania Medical Bulletin, June, 1901, p. 111.

² *Revue Neurologique*, 1901, No. 16, p. 784.

³ *Journal of Nervous and Mental Disease*, July, 1901, p. 385.

tain location. The right half of the cerebellum was markedly increased in size, and the upper surface was prominent and fluctuating, and a large cyst, confined to the right cerebellar lobe, and leaving the vermis free, was found. A tumor in the same location would probably have caused the same clinical picture—at least, until the pressure became so great that structures more remotely situated were affected.

In Jacoby's case the entire cyst wall was carefully examined with a magnifying glass, and a perfectly smooth cyst wall was found. Sections for microscopic examination were then taken from various parts of the cyst wall, and, considering the number of sections made, practically the entire area was examined. This was done because Williamson has had two cases in which careful dissection and fairly complete microscopic examination failed to give any evidence of new-growth, and yet a more extended examination revealed a very small patch of tumor formation in a part of the cyst wall. Williamson has concluded that a tumor may give rise to a cyst and then disappear, leaving only the cyst as evidence of its previous existence. Jacoby believes that the absence of all symptoms in the history of his case pointing to the growth of a tumor, and the finding of cysts in other organs, in the liver and kidneys, would indicate that the cyst was a simple serous one and that all the cysts had a common origin. Whether such a cyst may arise in consequence of dilation of a lymph space, or whether such cystic formation is of congenital origin, as cystic kidney and liver are assumed to be by some authors, are questions which Jacoby does not attempt to answer.

In a case diagnosed by L. E. Bregman—and probably correctly—as one of cerebellar tumor, the cranial sutures were opened by increased intracranial pressure. The patient was a boy, aged nine years. Separation of the bones of the skull at this age is uncommon, although it is said to have occurred as late as the fifteenth year. The severe headache and vomiting ceased as soon as more space within the cranium was afforded by this natural means, and this would seem to indicate that trephining in cases of brain tumor may be advisable even when the growth cannot be removed. I discussed this question, however, in my article of last year in *PROGRESSIVE MEDICINE*.

Bregman¹ reports three cases in which he felt assured that the diagnosis of cerebellar tumor was correct, and in two cases the diagnosis was confirmed by necropsy, but in none was an operation attempted. He refers to the unfortunate results that have been obtained by operations for the removal of cerebellar tumors. The dangers are caused by the deep situation of the neoplasm, by the presence of important sinuses,

¹ *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xx., Nos. 3 and 4, p. 239.

and the nearness of the medulla oblongata. Often when a cerebellar tumor is found it cannot be entirely removed. The simple resection of the occipital bone may cause death, but in quite a number of cases it has been the means of removing serious symptoms.

Sinus Thrombosis. Good asserts that no case of autochthonous sinus thrombosis has been published in which a correct clinical diagnosis has been made. He distinguishes from this form the otitic sinus thrombosis. Von Voss, who has collected the records of nine cases of autochthonous sinus thrombosis, gives as etiological factors: endocarditis with bronchopneumonia, nephritis, influenza, tuberculous peritonitis, typhoid fever, suppuration, loss of blood, intense anæmia, cardiac weakness, cachexia, and diarrhœa. Wilson has described a case resulting from insolation. All these causes affect the general organism, and it has been supposed that the endothelium of the vessels was impaired and thrombosis so produced. In Good's case no sufficient cause could be found, except possibly fatty degeneration of the myocardium, and yet this degeneration had caused no symptoms. Good's case was as follows: A person, aged forty-three years, who previously had been in good health and was vigorous, was suddenly attacked by epileptiform convulsions, vertigo, nausea, vomiting, and complete amaurosis. The face was red, and headache existed without rigidity of the neck and without paralysis and fever. The convulsions continued over the next day and the day following, and there were then deviation of the eyes, congested retinal veins, left-sided hemiparesis, and paraphasia. Sensation was not disturbed, and the pulse was regular. On the fourth day the patient was comatose, did not swallow, had paresis in the distribution of the right facial nerve, the face and neck became very cyanotic, and perspiration was profuse. The pulse was weak and the temperature rose. Death occurred on the fifth day of the disease.

At the necropsy thrombosis of the longitudinal sinus, hemorrhage in the subarachnoidal space, hemorrhagic pachymeningitis, capillary hemorrhages of the cortex and white substance, with internal hydrocephalus, were found.

Among the conditions which were taken into consideration in making a diagnosis were: Disturbance of the arterial circulation in the brain, hemorrhage in the occipital lobe, acute hemorrhagic encephalitis, superior hemorrhagic polioencephalitis, cerebral abscess, typhoid fever, uræmia, hysteria, sinus thrombosis, and hemorrhage in a basal tumor. Oppenheim believes that acute encephalitis causes symptoms resembling very closely those of sinus thrombosis, only in the former there is no venous congestion of head and face, and the course is not quite so acute. Good believes that the amaurosis in his case was contrary to the diagnosis of encephalitis. Disturbances of the arterial circulation

have an apoplectiform commencement. The character of the fever, the absence of rigidity of the neck and of intense headache excluded meningitis. He was unable to decide during the life of his patient whether the condition was one of hemorrhage into a basal tumor or sinus thrombosis. The absence of choked disk when amaurosis existed was contrary to the diagnosis of brain tumor, as was also the venous congestion of the face. No cause could be found for sinus thrombosis. The patient had previously been well. He concluded, as Nothnagel had done twenty years previously, that it is impossible to decide in a case of autochthonous, not phlebotic, sinus thrombosis, in which the history and etiology give no clue, whether the condition is thrombosis or hemorrhage.

An embolus was found in the lower lobe of the right lung. Good¹ believes that if he had detected this during the life of the patient he would have concluded that it had come from a thrombus in a brain sinus. After all, the diagnosis of sinus thrombosis loses some of its importance when we remember that little can be done for the patient. Opening the skull might confirm a diagnosis, and if a basal tumor were present it might give relief from pressure, but this relief of intracranial pressure might increase a hemorrhage into a tumor if such had occurred.

Cerebral Abscess. ABSCESS FROM TRAUMA. That infectious processes may develop in the central nervous system after trauma, even though the surrounding skin and bone have not been injured, seems possible, and yet it is difficult to prove this. The subject has recently been discussed by E. Ehrnrooth,² and he refers to several cases which seem to demonstrate that trauma may play such a rôle. One case he reports in full, as he himself observed it. A man received a severe blow on the right side of the head, and had temporary vertigo as a result. A week and a half later intense headache, chiefly on the right side, was experienced, and after a couple of months cerebral symptoms became pronounced. A cerebral abscess was found at operation, and the question as to the relation of this abscess to the head trauma arose. Whether the abscess were latent before the injury to the head occurred, or whether the injury caused a *locus minoris resistentie*, are questions that cannot be answered positively. That intracranial hemorrhage can be caused by trauma without fracture of the skull is certain, and that an area of the brain so injured must offer a suitable soil for the growth of bacteria is also certain, but we must assume that bacteria in some unknown way reach this injured area, and here is where the difficulty of explanation is experienced.

¹ Neurologisches Centralblatt, April 16, 1902, No. 8, p. 340.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xx., Nos. 1 and 2, p. 103.

ABSCCESS WITH BILATERAL LOSS OF VISION. A curious case of abscess of the occipital region of the brain from gunshot wound, with bilateral loss of peripheral vision, is reported by A. W. Sanders.¹ Only a very limited central vision was preserved; equal in the two eyes, and in most directions not exceeding five degrees, and in none reaching ten degrees. The author believes the lesion of the brain was unilateral, but it seems to me that he is assuming too much. This preservation of central vision, observed in other cases, has caused much perplexity.

ABSCCESS FROM THE TYPHOID BACILLUS. What is said to be the first case of brain abscess in which the typhoid bacillus was found to be the etiological factor is reported by R. W. McClintock.² The tests seem to establish the correctness of the diagnosis of the nature of the bacillus.

ABSCCESS OF THE FRONTAL LOBE. Abscesses of the brain or on the cerebral dura secondary to a purulent process of the nasal passages are occasionally first recognized at the necropsy, and operation with success seems only to have been reported by Denker and by J. Herzfeld.³ Abscess in the region of the frontal lobe is less likely to cause focal symptoms than is abscess of the temporal lobe, especially when the latter is on the left side. Slow pulse with elevated temperature, choked disks, pain on pressure over or near the frontal sinuses, changes of disposition, are regarded by Herzfeld as of considerable diagnostic value in regard to intracranial abscess on or in the frontal lobe. When focal symptoms occur from abscess in this location operation will usually be useless, as the lesion has become extensive. Herzfeld's patient was a young man who had slow pulse, pus in the frontal sinuses, tenderness on pressure over the left frontal sinus, pain in the left frontal region, some rigidity of the neck, especially on the left side, and stupor. An abscess of the frontal lobe was found and evacuated, and the patient made an excellent recovery.

Aphasia. WORD-BLINDNESS. The papers by Hinshelwood⁴ on aphasia are always interesting. Recently he has observed a case which seems to show that when an individual knows more than one language he may become word-blind to one language alone, or the word-blindness may vary in degree in the case of the different languages. Hinshelwood had a patient who became unable to read English, but could read Greek, and had partial word-blindness for Latin. On testing this man with French a greater degree of word-blindness was manifested than in the reading of Latin. Even with English the word-blindness

¹ *Lancet*, August 31, 1901, p. 580.

² *American Journal of the Medical Sciences*, April, 1902, p. 595.

³ *Berliner klin. Wochenschrift*, November 25, 1901, No. 47, p. 1180.

⁴ *Lancet*, February 8, 1902, p. 358.

was not absolutely complete, and there was no letter-blindness. Hinshelwood believes that in the case of a person who is able to read several languages the letter and word visual images of each language will be grouped together, forming thus a series of separate groups within the centre for word-seeing. If the whole centre is destroyed or its functional activity abolished, the individual will be word-blind to all languages; but if there is only a very partial interference with the centre then the word-blindness may only be very partial and may be limited to a single group of these visual images—*i. e.*, to a single language. Hinshelwood had another patient who could not understand French, his native tongue, and could only understand what was said to him in English—*i. e.*, he was word-deaf to French and not to English. The explanation Hinshelwood offers is that in the auditory memory centre we have the different languages arranged in separate groups, and hence in a partial lesion one group may be interfered with or destroyed, while the others are preserved. Another patient could read printed letters, but had considerable degree of letter-blindness for written letters. Of four cases of word-blindness Hinshelwood reports, in one only was there blindness for figures, and he concludes that the groups of visual memories of letters and figures are deposited in distinct but probably adjacent areas of the cerebral cortex. As many of these cases of word-blindness are the result of cerebral hemorrhage, Hinshelwood urges the importance of complete cerebral rest, and above all, of preventing the patient from practising reading for at least a considerable time after the attack. Many of these cases are the result of syphilis, and it is wise to put the patient on specific treatment if there is the slightest possibility of syphilis having been contracted. When actual destruction of the left angular and supramarginal gyri—which Hinshelwood believes to be the centre of word-seeing—has occurred re-education may call the corresponding centre of the right cerebral hemisphere into function, but re-education should not be attempted until all signs of acute brain disease have disappeared.

SUBCORTICAL MOTOR APHASIA. In “subcortical” (“pure”) motor aphasia the internal language is intact—*i. e.*, the person afflicted with this form of aphasia is able to read to himself, understands what is said to him, and can write spontaneously and on dictation, but cannot speak. It is especially this ability to write which distinguishes the “subcortical” from the “cortical” motor aphasia. A remarkable case of this form of aphasia is reported by Ladame.¹ His patient had a transitory paralysis of the right upper limb. The movements of the face and tongue were normal a year and a half after the beginning of the

¹ Revue Neurologique, January 15, 1902, p. 13.

symptoms, although for a time facial paralysis had existed. There was neither word-blindness nor word-deafness, and this patient read the journals and enjoyed being read to, and she could write spontaneously and on dictation, and could copy writing; but she could not speak voluntarily, or repeat or read aloud. This seems to have been a typical case of "pure" motor aphasia. A necropsy was obtained after ten years of clinical observation, and the foot of the left ascending frontal convolution and the posterior part of the left third frontal convolution were destroyed, and yet paralysis of the right side of the face and the right upper limb had been only temporary. Ladame concludes, and apparently with reason, that the symptoms of motor aphasia regarded as subcortical in origin may be caused by a cortical lesion of the frontal operculum; that agraphia is not necessarily caused by such a lesion; and that "subcortical" aphasia is a term that is incorrect.

Hemorrhagic Encephalitis. Ernst Sträussler¹ has observed two cases of acute hemorrhagic encephalitis with necropsy. In the first case no infection could be detected, and the spleen was not enlarged, but intoxication seemed probable. The large quantity of acetone in the urine was regarded as indicative of disturbance of metabolism. Both cases were thought to be from gastro-intestinal intoxication, and Sträussler assumes that such intoxication is common in encephalitis. There is probably no limit to the symptoms that gastro-intestinal intoxication may produce, but there seems to be more danger that too much rather than too little will be attributed to this cause. Such intoxication is very common, and even in cases in which it cannot be readily detected it can be assumed to exist.

Hemiplegia. **CROSSED PARALYSIS FROM PONTILE LESION.** It takes comparatively little to kill a man, but occasionally almost a miraculous escape is reported, as, for example, a case by Stanislaus Orlowski.² A man, engaged in a street fight, tried to hide behind a carriage, and while bent over received a stab with a knife in the neck on the right side. He lost consciousness. As a result of this injury he had on the right side paralysis of the trigeminus, abducens, facialis and acusticus, and on the left side temporary hemiparesis and persistent hemianæsthesia. It was a case of crossed paralysis. It seems surprising that after such an injury death did not occur. The pons must have been injured, and yet the skull apparently was not fractured. It was supposed that as the man held his head bent forward and to the left the long and thin knife passed through the foramen

¹ Wiener klin. Wochenschrift, January 16, 1902, p. 61.

² Neurologisches Centralblatt, October 1, 1901, p. 894.

magnum. The flat side of the blade must have been turned toward the medulla oblongata, as this part of the brain seemed to be intact. The fifth, sixth, seventh, and eighth nerves in their intracranial portions lie quite close together, but they were believed not to have been injured directly by the knife, at least in their extra-medullary portions. The vascular supply of this region is extensive, and it is possible that compression of the ventral surface of the pons by hemorrhage caused transitory left-sided hemiparesis, but it would be difficult to explain in this way the persisting left-sided hemianæsthesia. A lesion of some sort, possibly a hemorrhage within the pons on the right side might have destroyed the lemniscus and the nuclei of the fifth, sixth, seventh, and eighth nerves on this side.

A paper by Albert Ransahoff,¹ that is almost too full of anatomical details for mention in my clinical review, has, nevertheless, certain features of interest to clinicians. Five weeks after the beginning of the symptoms in his case the left external rectus, the right internal rectus, and the right external rectus were paralyzed, and the left internal rectus was both paralyzed and contracted. The left side of the face was paralyzed. The right limbs were paretic, and slight sensory disturbances were observed on the right side. Some alteration of speech was also present. The paralysis of the right external rectus disappeared after a time, while the weakness of the right limbs increased gradually, and the left side of the body became involved. Forced laughter was observed during the entire course of the disease. An area of softening was found at the necropsy, and the left abducens nucleus and the left facialis were involved. The right abducens nucleus was intact. The lemniscus and pyramidal tracts were degenerated, and this explains the sensory and motor symptoms in the limbs. The paralysis of the right internal rectus was a paralysis of associated movement, viz.: a paralysis caused by destruction of the left abducens nucleus and of the fibres in the posterior longitudinal bundle connecting it with the nucleus of the right internal rectus. The contracture of the left abducens was probably the result of destruction of similar fibres in the right posterior longitudinal bundle. The temporary paralysis of the right external rectus was a result of pressure on, or impaired nutrition of, the right abducens nucleus. This was an extremely interesting case of crossed paralysis—of the face on one side and limbs on the other—and was especially important because of the paralysis of associated ocular movements—the Blicklähmung of the Germans.

HEMIPLEGIA FROM CARDIAC DISEASE. The relation between verrucose endocarditis and cerebral hemorrhage does not seem to be gen-

¹ Archiv f. Psych., 1902, vol. xxxv., No. 2, p. 403.

erally recognized, and we are indebted to M. Simmonds¹ for a paper on this subject. He reports seven cases, most of them being in young persons, in whom death occurred from cerebral hemorrhage, and verrucose endocarditis also existed. Kidney disease or vascular disturbance other than that causing the hemorrhage could not be found, and no history of syphilis, alcoholism, or other intoxicants was obtained. As proof that the cardiac lesion was the cause in at least two of the cases, the same staphylococci were found in the ruptured aneurisms as in the endocardial proliferations. It seems probable, therefore, that small particles containing bacteria were carried from the valves of the heart into the cerebral circulation, and that the bacteria were the cause of small aneurisms at the points where they lodged. These two cases occurred in children, aged ten and eleven years, respectively, and they give to us one explanation of cerebral hemorrhage in early life. The condition of the cardiac valves should be carefully determined when cerebral hemorrhage is found in childhood.

SOME NEWLY DESCRIBED PHENOMENA OF HEMIPLEGIA. What Strümpell² has described as the tibialis phenomenon seems to have escaped the attention of most clinicians. If the examiner places one hand on the partially paralyzed thigh of a patient with hemiplegia, and the other on the foot of the same side, and then has the patient flex the limb at the hip and knee, he can feel and see the tibialis anticus muscle contract, and this contraction is increased by the attempt to resist with the hand on the thigh the voluntary movement of the patient. This phenomenon may be observed also in spastic paraplegia of the lower limbs, provided, of course, the paralysis is not complete. It is not seen in flaccid paralysis. It is the result of the inability to innervate the iliopsoas muscle without innervating the tibialis anticus, and may be present when voluntary isolated dorsal flexion of the foot is impossible. It is caused by a lesion of the pyramidal tract. It is to a certain extent a normal finding in newborn children, in whom the pyramidal tract is very imperfectly developed, and would seem to depend, therefore, on the absence of the inhibitory and regulating influence of the pyramidal tract.

Another form of associated movement described by Strümpell consists in dorsal flexion of the great toe when a patient with hemiplegia elevates his paretic lower limb in the extended position from the bed.

A similar phenomenon is observed when a hemiplegic patient attempts to sit up in bed without supporting himself by his arms. The leg on the paretic side is then flexed at the hip.

¹ Deutsche med. Wochenschrift, 1901, No. 22, p. 353.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xx., Nos. 5 and 6, p. 436.

A phenomenon occurring in the upper limb in a hemiplegic is called by Strümpell "radial phenomenon." This name is not suitable in English, as the nerve innervating the affected muscles is known by us as the posterior interosseus. The phenomenon consists in excessive dorsal flexion of the hand when a fist is made with the paretic member, and is merely an intensification of the normal contraction in the extensors of the hand occurring when the fingers are flexed.

The "pronation phenomenon" of Strümpell is the following: If a hemiplegic patient holds the paretic upper limb hanging by his side with the palm to the front, and then elevates the limb at the shoulder, pronation of the forearm occurs as the limb is elevated.

All these forms of associated movement are of value in distinguishing between organic and hysterical paralysis, and may have legal importance.

It seems that Oppenheim¹ and Babinski have each described the flexion of the thigh on the abdomen, and the raising of the heel from the bed, when a person with hemiplegia attempts to sit up in bed without assisting himself with his hands; and the former regards it as a sign of spastic paralysis and as not confined to hemiplegia; he speaks also of the elevation and abduction of the upper paralyzed limb occurring at the same time.

POSTHEMIPLEGIC MOVEMENTS. Posthemiplegic chorea, athetosis, or similar movements are difficult to explain, and Kahler and Pick, some twenty years ago, attributed them to irritation of the central motor tract. This view has not been acceptable to all, and Bonhöffer² has explained these movements as the result of lesion of the anterior cerebellar peduncle or of fibres passing from it—*i. e.*, as a result of injury to centripetal fibres. His recent paper on this subject is chiefly a restatement of his opinion, and does not contain anything very new. The posthemiplegic involuntary movements, he would teach us, are comparable with the ataxia from disease of the posterior roots.

POSTAPOPLECTIC HEMIHYPERTONIA. I have previously in *PROGRESSIVE MEDICINE* spoken of postapoplectic hemihypertonia, and described the features by which it differs from athetosis. McCarthy's³ case is a typical example of this hemihypertonia, and especially interesting because no period of unconsciousness occurred.

ASSOCIATED MOVEMENTS IN HEMIPLEGIC AND NORMAL PERSONS. Associated movements in hemiplegia, such as occur in the paralyzed limbs when the sound limbs are moved voluntarily, or when a reflex action occurs, are well known, but associated movements in perfectly

¹ *Monatsschrift f. Psychiatrie und Neurologie*, January, 1902, p. 1.

² *Ibid.*, November, 1901, vol. x., No. 5, p. 383.

³ *American Journal of the Medical Sciences*, May, 1902.

healthy persons seem to have been observed only by three persons: Thonayer, Damsch and Fragstein.¹ The latter's case resembled Damsch's two cases very closely. When Fragstein's patient made a movement with one side of his body the corresponding muscles on the other side contracted also. When he wrote with his right hand corresponding movements were made with the left. The associated movements were most pronounced in the face, and in the upper limbs they were seen especially in the hands and fingers, while in the lower limbs they were less distinct. These associated movements occurred also when the muscles were moved passively or by an electric current. When the muscles on one side were irritated by electricity only the corresponding muscles on the other side of the body contracted. The explanation for these phenomena is not easy. Fragstein attributed them to overflow of impulses sent out from the motor cortex; to the fact that corresponding muscles on the two sides of the body are innervated from each motor cortex. It has been demonstrated that a nerve fibre can conduct impulses in either direction, and Fragstein thinks, therefore, that by passive movement or electricity the impulses were conveyed through the motor fibres to the cortical centre of one cerebral hemisphere, and there influenced the corresponding motor fibres innervating the opposite side of the body.

PERSISTENT HEMIANÆSTHESIA IN HEMIPLEGIA. Persistent hemianæsthesia is rare in hemiplegia, and the case of Dereum and Spiller,² in which it existed for more than eight years, is important because a necropsy was obtained and microscopic examination of the basal ganglia of the diseased cerebral hemisphere was made. A cyst was found that had destroyed the posterior part of the posterior limb of the internal capsule (*carrefour sensitif*), and the posterior part of the lenticular nucleus, and the sensory tract (lemniscus) on the affected side was atrophied. This case is probably the first to show positively that destruction of the portion of the brain mentioned without any direct implication of the optic thalamus will cause hemianæsthesia.

BULBAR PARALYSIS IN A CHILD TERMINATING IN RECOVERY. Bulbar paralysis in a child of five years, terminating in complete recovery, such as in a case observed by Julius Zappert,³ is so uncommon as to be worthy of being placed on record. Zappert tries to explain the case, necessarily unsatisfactorily as there was no necropsy, and concludes that the process must have been like that occurring in poliomyelitis.

BULBAR PALSY WITH ANÆMIA. A curious case of bulbar palsy, supposed to be analogous to the degeneration occurring in the spinal

¹ Monatsschrift f. Psychiatrie und Neurologie, vol. x., No. 5, p. 348.

² American Journal of the Medical Sciences, March, 1902, p. 444.

³ Jahrbücher f. Psychiatrie und Neurologie, vol. xxii.

cord in pernicious anemia, carcinoma, or tuberculosis, is reported by H. Hensen.¹ Sarcomata were found in many organs of the body, but none were present in the brain or in the meninges, nerves, and bones of the base of the cranium. The bulbar palsy was the first sign of the sarcomatosis, and preceded the anemia. The case is exceedingly obscure, as I know of no other case in which bulbar symptoms without spinal symptoms occurred in a wasting disease.

Myasthenia Gravis Pseudoparalytica. Gowers² makes special mention of weakness in the zygomatic muscles in myasthenia gravis. Smiling and laughing are much altered by the weakness of these muscles. They pull the corners of the mouth outward, and thereby produce a deep nasolabial fold. At the same time the upper lip is raised by the levator muscles, and in this way the nasolabial fold is made deeper. When the zygomatic muscles are paralyzed the corners of the mouth are not drawn outward, and the outer part of the nasolabial folds is absent, but the upper lip is drawn unusually high upward because of the over-action of the levator muscles. This form of laughter is very striking. Gowers reports two cases of myasthenia gravis in which it was present. One of these cases he studied as far back as 1874. This "nasal laughter," as Gowers calls it, should suggest myasthenia. The muscles of the face in which fatigue occurs in myasthenia are, in great measure, those which are atrophied in the infantile form of muscular dystrophy, and to this extent the two diseases resemble one another, but Gowers does not mean to imply that they are one disease.

In a case of myasthenia gravis reported by Hingston and Stoddart,³ the unusual features were the patient's age (seventy-one years), the exceptionally acute course of the disease (seven weeks), and the association with diabetes. This disease seems to belong to the third decade of life, and Hingston and Stoddart have not been able to find in the literature any record of a person who had reached the seventh decade when the disease developed. In Erb's first case the age of the patient was fifty-five years, and this was the most advanced age on record. The only case in which the course was more acute was reported by Widal and Marinesco, the duration of the disease in this case being only fourteen days. The symptoms of myasthenia gravis appeared in Hingston and Stoddart's case so soon as the patient relaxed his diabetic diet.

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 3 and 4, p. 235.

² Deutsche med. Wochenschrift, April 17, 1902, No. 16, p. 278, and April 24, 1902, No. 17, p. 305.

³ Lancet, March 15, 1902, p. 737.

Although muscular atrophy is not a prominent sign of myasthenia gravis, it may occur in this disease, as Liefmann shows.¹

The differential diagnosis of myasthenia gravis from other diseases resembling it and the report of a case are given by L. G. Guthrie.²

The case of myasthenia gravis reported by Auerbach³ was without necropsy, and does not add very much to our knowledge of the disease, but is remarkable in that the duration of the disease had been seventeen years. Auerbach speaks of rapid exhaustion being a symptom both of myasthenia gravis and of neurasthenia, although he does not mean to imply that these two diseases are identical.

Myasthenia gravis pseudoparalytica is a disease which has seemed to have no pathological findings. As Giese and F. Schultze⁴ point out the chromatolysis found by Widal and Marinesco may have been the result of fever, and the degeneration of the intramedullary portion of the roots of the hypoglossus, demonstrated by Marchi's method, does not seem to have been very important, especially as the nucleus of the nerve was normal. The case reported by Giese and F. Schultze was also negative so far as pathological findings were concerned; and it may be said, therefore, that the cause of asthenic bulbar paralysis is unknown.

A case of myasthenia gravis with necropsy, reported by Walter K. Hunter,⁵ contributes little to our knowledge of this strange disease, because as in most other cases nothing very definite was found.

Carl Weigert's⁶ findings in a case of this disease are of importance, although we cannot judge as yet of their significance. A malignant tumor of the thymus existed, a tumor consisting chiefly of small cells containing little protoplasm and a single round nucleus rich in chromatin—*i. e.*, lymphoid cells, but containing also some epithelioid cells. Very similar cells were found in pieces of muscle examined. Weigert is cautious in interpreting these findings, and does not believe the pathology of myasthenia gravis has been fully discovered; and yet this case, with one or two others in which a tumor of the thymus was found, certainly suggests an explanation for the symptoms in some of the sufferers from this disease. Hereafter in every necropsy in a case of myasthenia gravis the thymus gland, or whatever may remain of it, and muscles should be carefully studied microscopically.

S. Goldflam,⁷ in a case of myasthenia gravis, obtained findings closely

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 3 and 4, p. 159.

² Lancet, February 9, 1901, p. 393.

³ Archiv f. Psychiatrie, vol. xxxv., No. 2, p. 480.

⁴ Deutsche Zeitschrift f. Nervenheilkunde, vol. xviii.

⁵ Lancet, December 7, 1901, p. 1580.

⁶ Neurologisches Centralblatt, July 1, 1901, p. 597.

⁷ Ibid., February 1, 1902, p. 97.

resembling those of Weigert, viz.: circumscribed microscopic groups of small, mostly mononuclear cells, resembling lymphoid cells, in the muscles. Polynuclear cells were not numerous. These groups were found in the connective tissue between the muscle fibres, and were of irregular size, and were situated around congested bloodvessels. No bacteria could be detected. Goldflam was in some doubt whether these groups were to be considered as inflammatory or as metastatic from a tumor of the lung, which, from its gross appearance, was believed to be a lymphosarcoma. Inasmuch, however, as disseminated foci of inflammation in muscle are rare; that no signs of inflammation were detected during the life of the patient; that the same changes were found in muscle excised one and three-quarter years before the death of the patient, and in muscle removed from the cadaver; that there was no evidence of sepsis in the case; that no bacteria were found, Goldflam believes that metastasis was the more probable condition.

Amaurotic Family Idiocy. E. Frey¹ has been able to study the microscopic sections from a case of amaurotic family idiocy. Nothing pathological could be seen with the naked eye, but under the microscope degenerative changes could be found throughout the entire central nervous system, especially in the cerebral cortex, by which secondary changes were produced in midbrain, pons, cerebellum, medulla oblongata, and spinal cord. The posterior roots and posterior columns of the cord were also implicated. The process has been compared by Schaffer to that of amyotrophic lateral sclerosis. Frey believes that in his case the degeneration occurred after birth, and, therefore, the disease, according to this view, is not merely the result of imperfect development of the central nervous system, but of degeneration of tissue.

Meningitis. **KERNIG'S SIGN.** A few cases have been reported in which Kernig's sign had been present, although meningitis had not existed, and recently Sailer has reported two cases of this character in which the sign was unilateral. One, with necropsy, was a case of encephalitis in the middle of the right ascending parietal convolution, and Kernig's sign had been present on the left side. No necropsy was obtained in the other case. Sailer cannot explain the nature of the mechanism by which Kernig's sign is produced any more than could those who previously have written on this subject, but he ascribes it to an irritative lesion of the pyramidal tract that diminishes but does not destroy its functional activity, and he compares it with Babinski's sign. He calls attention to Kernig's sign as indicative of focal

¹ Neurologisches Centralblatt, 1901, No. 18, p. 836.

encephalitis, and states that in this condition it may be present upon only the opposite side of the body. Sometimes it is associated with spastic paresis of the leg upon that side. In these cases there may be a persistent tonic spasm of the flexor muscles of the arm which does not resemble Kernig's sign in its mechanism.

W. G. Shields has examined 100 non-meningitis cases, both febrile and afebrile, for the presence of Kernig's sign, and in 5 cases the sign was present. In 3 the sign was unilateral; in 2 bilateral. In a case of uræmia and one of typhoid fever the sign was present, but could not be obtained after recovery occurred. Two were cases of hemiplegia, and the fifth was one of typhoid fever. As in both the cases of typhoid fever delirium was marked and persistent, and as meningitis may be caused by typhoid fever, these cases seem to me less valuable than the other three.

F. S. Clark¹ reports 3 cases of meningitis, 2 of the tuberculous form, in which Kernig's sign was never present. These cases confirm the opinion that the sign is especially unreliable in tuberculous meningitis.

SYPHILITIC MENINGITIS WITH FEVER. Cases of syphilitic meningitis with fever are not numerous, and some have believed that this form of meningitis could be distinguished from the tuberculous form by the occurrence of fever in the latter, but others have assumed that fever though rare does occur in syphilitic meningitis. Oppenheim says the course of syphilitic basal meningitis is usually fever-free, apart from the preagonal rise of temperature, although a moderate increase in temperature is not so very rare. High fever occurring in syphilitic meningitis should suggest a complication. Dorendorf,² after referring to these opinions, reports a case in which fever occurred. A necropsy was not obtained, so that some doubt concerning the correctness of the diagnosis must exist. Typhoid fever and tuberculous meningitis were excluded. The patient had lesions believed to be indicative of hereditary syphilis, and the administration of mercury and iodide of potassium caused a speedy decrease of temperature, and the patient, a child, aged fifteen years, was discharged cured.

TUBERCULOUS MENINGITIS WITH MYELITIS. It is well known that tuberculosis of the cerebral membranes is often associated with tuberculosis of the spinal membranes, and also that superficial areas of softening may occur; but it is uncommon for the spinal disease to be the more intense, and to cause transverse myelitis, and yet this is what occurred in a case observed by H. Hensen.³ His patient presented distinct cerebral symptoms, and these were soon followed by symptoms

¹ American Journal of the Medical Sciences, May, 1902.

² Charité-Annalen, twenty-sixth year, p. 75.

³ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 3 and 4.

indicative of complete transverse lesion in the thoracic region of the spinal cord. I have seen just such a symptom-complex in a case of diffuse sarcoma of the spinal and cerebral pia.

Reflexes. EXAGGERATION OF CREMASTERIC REFLEX. G. A. Gibson¹ has observed considerable exaggeration of the cremasteric reflex in cases of sciatica. This exaggeration was present not only in the more serious types of the disease, attended by wasting of muscle and disturbance of electric reactions, but also in less grave varieties, not accompanied by muscular wasting and changes in electric response. The reflex can be elicited in the ordinary way by gently stroking the skin on the inner side of the thigh; but it is more easily produced by firm pressure over the lower and inner portion of Scarpa's triangle, whose sensory nerve supply is derived from the internal cutaneous branch of the anterior crural nerve. In cases of unilateral sciatica, according to Gibson, pressure in this region on the unaffected side produces the ordinary slight cremasteric contraction, while an equal stimulus applied to a corresponding point of the affected limb gives rise to a greatly exaggerated response on the side of the lesion. In some cases this is followed, slightly later, by a less distinct contraction on the opposite and unaffected side.

This exaggeration of the cremasteric reflex occurs in cases which do not manifest much increase in the knee-jerk as well as in others with great augmentation of this jerk. Gibson believes that the extent of the cremasteric reflex is greater when the knee-jerk is much exaggerated, yet the increase of the cremasteric response is more constant than that of the knee-jerk. In some of his cases the plantar and gluteal reflexes were almost as much exaggerated as the cremasteric reflex, but in others the first two were scarcely obtainable. The explanation that he offers for the exaggeration of the cremasteric reflex is that in sciatica the segments of the cord above the level of the lumbosacral region are in a condition of excessive irritability. The cremasteric reflex arc, and that for the knee-jerk pass, according to Gibson, through the second lumbar segment, anatomically, therefore, this segment is above the connections of the sciatic nerve, and it seems to Gibson probable that in sciatica the segments of the cord at and below the sciatic connections have but little tendency to excessive irritability.

ACHILLES JERKS. The Achilles jerk has much importance in diagnosis. Edwin Bramwell² has studied it in a large number of diseased and healthy persons, and he believes that it is probably always present in healthy persons under fifty years of age. A local cause, such as

¹ *Edinburgh Medical Journal*, May, 1901, p. 459.

² *Brain*, vol. xxiv., No. 96, p. 554.

great œdema of the leg, may prevent the reflex. After the age of fifty years the activity of the jerk diminishes with increasing age, and in old people absence of the Achilles jerk, especially if bilateral, cannot be regarded as having the same diagnostic significance that it has in children, young persons, and middle-aged adults. The Achilles jerk is usually lost in those cases of disease in which the knee-jerk is lost, such as tabes and peripheral neuritis, but in some cases in which the knee-jerks are unaltered the Achilles jerk is absent or greatly diminished. In tabes the Achilles jerk may be lost before the knee-jerk, and, therefore, in a doubtful case the condition of this reflex should be determined. The absence of the Achilles jerk is a sign of importance in the diagnosis between true sciatica and the hysterical form of the disease, as in the former this jerk is usually lost, and it may remain absent for years after the sciatica has disappeared. The Achilles jerk may be absent in multiple neuritis when the knee-jerk is preserved. Most of these facts are well known, but the importance of the Achilles jerk is often overlooked, and, therefore, Bramwell's paper is of great service.

ANKLE CLONUS. S. Weir Mitchell¹ has made a study of the muscular factors concerned in ankle clonus. He has found that the soleus alone is active in the production of this clonus, and consequently that the gastrocnemius does not take part in the movement. The proof of this is readily found, he says, in thin spastic patients. To test the matter the patient should be at rest, supine, with the leg fully flexed on the thigh. Then grasping the belly of the relaxed gastrocnemius with one hand, with the other start the clonus. It will be observed that, as the foot is flexed by the hand, the gastrocnemius is felt to become tense, but that as extension occurs no motion is felt in the belly of the gastrocnemius. If during the clonus while the leg is kept flexed the fingers are pressed in under the gastrocnemius, the soleus can be felt to harden each time the foot is extended. The explanation offered lies in the mechanical relations and attachments of these two muscles. The gastrocnemius is inserted on the femur; the soleus on the tibia; both by a common tendon on the heel. When the leg is flexed on the thigh the gastrocnemius, being attached to the femur, becomes relaxed, but the soleus, left independent by reason of its tibial attachments, may be jerked freely through sudden passive foot flexion and be free to respond. Duchenne, many years ago, called attention to the loss of power in the gastrocnemius to extend the foot when the leg is flexed on the thigh, because of the relaxation so produced in this muscle.

¹ Journal of Nervous and Mental Disease, May, 1902, p. 257.

LATERAL ANKLE CLONUS. J. K. Mitchell¹ has found in a case of disseminated sclerosis that when the foot was pushed a little to one side instead of upward, a rapid lateral clonic movement was produced. The lateral motion could usually be produced by giving the great toe a slight sharp inward push and releasing it. The muscles being in an unnaturally tense state this movement started the contractions, just as pushing the foot upward smartly starts some of the posterior leg muscles into clonic activity. The excursion was so short and the muscles which might produce it are so small and deep-set that it is difficult to determine the special muscles concerned.

J. K. Mitchell found that when he attempted to straighten the toes in this patient, which were always somewhat rigidly half-flexed, a toe clonus was started. It was slow, not more than three or four times a second, and was exhausted by eight or ten contractions. If it were excited by carefully pushing up the ungual phalanges with a force too slight to alter the position of the foot, the clonic movement was limited to the toes; but if the push were stronger so that the foot moved on the ankle, ankle clonus appeared. The toe motion was performed by the *interossei*, the *flexor brevis* and *longus* not coming into play. These phenomena at present at least have no clinical importance, but it is sometimes in these apparently insignificant phenomena that the possibility of diagnosis in a difficult case rests.

PATELLAR REFLEX IN TRANSVERSE LESIONS OF THE SPINAL CORD. The loss of the knee-jerks following complete transverse lesion high in the cord has been the subject of much discussion. Bálint,² after a careful study of the literature, concludes that cases have been reported in which complete division of the spinal cord has not caused a loss of the knee-jerks, but that other cases have been reported in which complete or partial transverse division of the cord high up has caused flaccid paralysis of the lower limbs with loss of the knee-jerks. This has probably been by complications, such as œdema of the cord, increase of pressure from the cerebro-spinal fluid, degeneration of the posterior roots, etc.

Brissaud³ does not dispute that a *complete* and *sudden* division of the spinal cord, such as occurs sometimes from traumatism, causes a paraplegia that is flaccid and remains permanently flaccid, with loss of the reflexes and of sensation in the paralyzed parts; but a slow compression of the spinal cord, he believes, causes spastic paraplegia. In association with Maurice Brécy, he describes a case of tuberculous cervical pachymeningitis, in which within less than thirty-six hours

¹ Journal of Nervous and Mental Disease, May, 1902, p. 260.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xix., Nos. 5 and 6, p. 414.

³ Revue Neurologique, February 28, 1902, No. 4, p. 169.

complete paraplegia developed with abolition of the reflexes. A circumscribed thoracic myelitis was found. Brissaud and Brécy report this case as an example of flaccid paraplegia resulting from a pathological process which in its usually slow development may exist with preservation or even exaggeration of the tendon reflexes. This case does not seem to prove very much, and it would have been much more instructive had it been one of complete transverse lesion of slow development with preservation of the reflexes.

Raymond and Cestan¹ share Brissaud's opinion that a complete transverse lesion, of sudden development, of the spinal cord above the lumbar enlargement causes a loss of the tendon reflexes, and they also dispute the statement that a slowly developing transverse spinal lesion causes flaccid paraplegia. They report two cases of spastic paraplegia resulting from psammoma compressing the thoracic cord, and the compression was so great that all connection between the brain and lower part of the spinal cord had evidently been destroyed. It seems, therefore, important to make a distinction between slowly and rapidly developing transverse lesions of the spinal cord above the lumbar region when attention is paid to the condition of the tendon reflexes.

W. A. Turner,² in a paper read before the New York Neurological Society, has sought to obtain information from the experimental side of the question. He remarks that as commonly stated, experimental cross-section of the spinal cord above the lumbar enlargement in vertebrate animals leads to no immediate interference with the tendon reflexes; but that as time goes on after such operation the knee-jerks become exaggerated, and the resulting paraplegia, which is at first of the flaccid type, assumes later on the rigid and spastic character so commonly seen in old-standing cases of acute myelitis in man. In man, on the other hand, a fracture dislocation of the vertebral column in the cervical and thoracic regions is productive of permanent flaccid paralysis of the limbs and loss of the knee-jerks; and if the lesion be complete there is no tendency at all toward rigidity or contracture. The opinion just expressed is not accepted by all experimenters, and much variation in the state of the knee-jerks has been observed, both immediately and some time after complete division of the spinal cord. Turner, from his own experiments on monkeys, has found that the presence or the absence of the knee-jerks is influenced by the level of the transection of the spinal cord, and perhaps of a subsidiary nature, that the method of severing the cord would appear to have some influence in determining temporarily the state of the jerks. As soon

¹ *Revue Neurologique*, February 28, 1902, No. 4, p. 174.

² *Journal of Nervous and Mental Disease*, June, 1902.

as the monkeys emerge from the chloroform anæsthesia, if the lesion has been made at or below the level of the fourth dorsal segment, the knee-jerks are elicited, and may even be more vigorous than previously. In the higher transections, those made about the level of the second and third dorsal segment, some difficulty was experienced temporarily in eliciting the jerks. In still higher cases—transection at the level of the first dorsal and eighth cervical segments—the knee-jerks could temporarily be obtained with difficulty, but in both instances they entirely failed within the first quarter or half an hour after the transection.

The higher the level of the transection the greater the likelihood of the knee-jerks being temporarily diminished or abolished. Turner believes that there is no case on record in which the spinal cord in man has been completely severed and a return of the tendon-jerks has occurred. This statement is based upon the writings of Bruns, who has analyzed most of the recorded instances of this condition. Turner refers to two cases in which the symptoms as regards motion, sensation, and the type of palsy were indicative of a complete physiological transection of the spinal cord above the lumbar enlargement. There was immediate and prolonged loss of the knee-jerks, in the first case for forty days, in the second for four months, with retention of plantar reflexes of the extensor type. With the return of the knee-jerks a tendency to muscular rigidity, contracture, and spasm occurred. The transection in these two cases was incomplete, but there was pronounced descending degeneration in the crossed pyramidal and antero-lateral descending tracts, and the nerve-cell bodies of the lumbar enlargement by the Nissl method appeared to be healthy. Loss of the knee-jerks, therefore, may occur from partial transverse lesion of the spinal cord above the lumbar region.

Turner says that the state of the skin reflexes after transection of the spinal cord is variable. In some they are abolished, in others retained, and at times they are increased. As even in healthy individuals the skin reflexes are an uncertain quantity, little assistance is rendered by them in transection of the cord.

The explanation of the discrepancy which exists between the results of transection in laboratory animals and man may be explained by the greater autonomy of the spinal segments in maintaining neuromuscular tonus as we descend the vertebrate scale.

Turner says that in man, as experimentally in monkeys, although the knee-jerks may be abolished, some true reflex actions are permanently maintained, such as the plantar and the superficial anal reflexes, and notably in monkeys, the crossed adductor jerk. His paper contains the results of very careful experimental study, but we are still a

long way from understanding why the knee-jerk is lost in transverse lesions above the lumbar regions.

SLOWING AND FATIGUE OF PATELLAR REFLEX. Von Bechterew¹ speaks of the slowing of the patellar reflex seen in multiple neuritis during the convalescence, and disappearing as the symptoms of neuritis disappear. In myelitis of the lower thoracic and lumbar regions he has observed rapid fatigue of the patellar reflex, at a time when the disease is becoming less severe. The first stroke of the percussion hammer produces a prompt response, but each succeeding blow is answered by a feebler response until no reflex is obtained. Rest causes restoration of the reflex. Similar evidence of fatigue in the tendon reflexes he has observed repeatedly in the commencement of multiple neuritis, or of tabes before the complete abolition of the reflex has occurred. Fatigue in reflex action is, therefore, to be observed in the commencement or termination of certain diseases, and is indicative of some lesion of the reflex arc. The increase or diminution in the fatigue points to the progression or retrogression of the disease, and this sign in connection with others is of diagnostic value.

What von Bechterew has here described is so well known to neurologists that it is unnecessary to dwell very long on the subject. No one can dispute the correctness of his statements, because they correspond with the experience of most physicians. The symptoms are important, especially so as they occur at a period of the disease when other symptoms may not be so pronounced as one could desire, and consequently they are of much diagnostic value, but there is nothing new in this fatigue or slowing of reflex action.

SUPRA-ORBITAL OR OPHTHALMIC REFLEX. Under the name of supra-orbital reflex, D. J. McCarthy² has described a reflex in the distribution of the fifth and seventh nerves. If a light blow is given with the percussion hammer over the supra-orbital nerve a fibrillary tremor in the orbicularis palpebrarum may be observed. The eyes must be open, but only in a natural manner. The tapping does not cause closure of the lids, and at most a slight approximation of the lids. Occasionally twitching may be seen in both orbicular muscles when the blow is given only on one side. The reflex disappears when a lesion occurs in either the sensory or motor part of the reflex arc; thus it is absent in facial palsy implicating the upper branch of the seventh nerve, or in cases where the Gasserian ganglion has been removed. I have found that it is absent when the reflex closure of the lids from irritation of the eyeballs is absent, and present when this

¹ *Neurologisches Centralblatt*, February 15, 1902, p. 146.

² *Ibid.*, September 1, 1901, p. 800.

winking reflex is present. This latter is also a reflex in the distribution of the seventh and fifth nerves, and a very distinct one, so that the two reflexes seem to have the same importance. McCarthy was entirely in ignorance that this ophthalmic reflex had been described previously by Overend. To the former is due the credit of making the reflex well known, but to the latter the priority. The adverse criticism given by one or two German writers regarding McCarthy's paper is entirely unjustifiable.

Overend¹ asserts that he described the ophthalmic reflex in 1896, and observed it as far back as 1889. He has found that it is not only the supra-orbital, but also the cutaneous and periosteal terminal twigs of the supratrochlear, infratrochlear, nasal and lacrymal, in fact, all the end branches of the ophthalmic nerve which are concerned. The name "ophthalmic reflex" seems to him more suitable.

The contraction of the lower lid or of both lids from striking the face at different parts is, according to von Bechterew,² partly a reflex, partly the result of transmitted mechanical irritation through the periosteum, tendons, and muscles to the orbicularis oculi. The irritation need not be confined to the supra-orbital distribution, but the phenomenon may be produced by irritation of the entire frontotemporal region, of the nose, of the zygomatic arch, and even of other portions of the face, although it is more evident when the irritation is near the orbicularis oculi. The phenomenon may be present even though the trigeminus is diseased, but its intensity is diminished by such disease. It is lost in peripheral facial palsy but not in central, and is, therefore, valuable in diagnosing between these conditions.

Sailer's³ investigations on three cases of facial paralysis confirm McCarthy's statement that the ophthalmic phenomenon is a true reflex. Sailer found that in facial palsy when the trunk of the supra-orbital nerve on the paralyzed side of the face is struck no contraction in the orbicularis palpebrarum may occur on the same side, while distinct contraction may occur in the corresponding muscle of the sound side of the face. This phenomenon he regards as a crossed reflex, proving beyond any dispute that the motor nerve in this reflex is innervated from the medullary centre as a result of afferent impulses conveyed along the opposite sensory trunk. In one case percussion upon the lower edge of the malar bone on the paralyzed side of the face caused distinct sluggish, worm-like contraction of the muscles elevating the corner of the mouth. This Sailer regarded as an evidence of increased myotatic irritability in the diseased muscles. In another case

¹ *Lancet*, January 25, 1902, p. 219.

² *Neurologisches Centralblatt*, February 1, 1902, p. 107.

³ *Philadelphia Medical Journal*, November 23, 1901, p. 914.

when the supra-orbital nerve on the paralyzed side was struck with moderate force a slight contraction occurred in the orbicularis palpebrarum of the same side, and in addition a distinct lifting of the external angle of the mouth on the same side was seen. This latter phenomenon appeared to be due to the irradiation of the reflex to several of the medullary motor centres.

CORNEO-MANDIBULAR REFLEX. Von Sölder¹ states that a reflex, named by him the corneo-mandibular reflex, is produced by touching the cornea, and is shown by a movement of the lower jaw to the side opposite to the irritated cornea. The reflex is produced only by irritation of the cornea. The mouth must be partly opened and the lower lip should be held down for purposes of observation. The reflex arc is contained in the motor and sensory fibres of the trigeminus. This reflex is not always present in normal persons, but when present is soon exhausted but soon restored. No attempt is made by von Sölder to determine its clinical value.

LACRYMAL REFLEX. The lacrymal reflex is not absent in cases of hysterical anæsthesia of the conjunctiva and nasal mucous membrane. This preservation of one reflex when the closure of the eyelids from reflex irritation is lost in hysterical anæsthesia is remarkable, and a satisfactory explanation is not at present obtainable. The lacrymal reflex should be diminished in organic anæsthesia of the face, because the sensory portion of the reflex arc is partly in the trigeminal nerve, and when the Gasserian ganglion has been removed the reflex, therefore, should be impaired. This I have found to be actually the case in two patients I have examined in whom the Gasserian ganglion had been removed for the relief of tic douloureux. I found that when I irritated the nasal mucous membrane on the anæsthetic side very little increase in the secretion of tears on this side was produced, but that when I irritated the nasal mucous membrane on the other side the secretion of tears in the corresponding eye was much increased within a moment or two. Care should be taken in testing the reflex to avoid placing the patient in a very strong light, as the optic nerve from light irritation becomes the sensory portion of the lacrymal reflex. It is desirable that many cases of organic anæsthesia of the face should be studied to determine the diagnostic value of the lacrymal reflex, as it is possible that it may prove to be a valuable sign in differentiating between organic and hysterical anæsthesia of the face. Occasionally we are much puzzled in making a distinction between these two conditions.²

¹ *Neurologisches Centralblatt*, February 1, 1902, p. 111.

² *Philadelphia Medical Journal*, May 17, 1902, p. 892.

DISEASES OF THE SPINAL CORD.

Tabes. MODIFICATION IN THE SEVERITY OF TABES. Brissaud¹ has recently stated that tabes as it now appears is not so severe as formerly ; it is of slower development, and cases of arrested tabes are more numerous than they were ten or twenty years ago. This opinion is also shared by Marie, and the amelioration is attributed by him to the antisyphilitic treatment. Raymond likewise believes that this treatment is of much benefit, and employs it in all his cases of tabes, as in many cases of tabes true syphilitic lesions may be present. Babinski says that while in former years the mild form of tabes was considered exceptional, now it is common, and the person affected may not be aware that he has tabes. Benign tabes is more common now, and this is partly due to the fact that it is more readily recognized, and partly to the employment of the antisyphilitic treatment. Joffroy is skeptical regarding the efficacy of this form of treatment in tabes, and believes that if employed energetically it may do harm. Regression of symptoms occurs in some cases in which this treatment has not been tried. No one who sees many cases of nervous disease can doubt that the abortive form of tabes is very common, and that the disease may never progress beyond this abortive form. As regards antisyphilitic treatment, the opinions of neurologists in America seem to be much like those of the neurologists of France—*i. e.*, some favor and others discountenance it.

TABES IN CHILDHOOD. Tabes beginning in childhood is exceedingly rare, and it has been assumed by some authors that such cases occur only when syphilis has been inherited. This assumption cannot be maintained, as there are three cases—and probably only three so far—in which tabes developed in children who had acquired syphilis (Crohn, Kutner, Halban). Crohn reports a case in which syphilis was contracted in the first year of life from a servant. When seventeen years old the patient, a girl, had rigid pupils, lost knee-jerks, analgesia of the legs below the knees, and ataxia. Kutner's patient, also a girl, contracted syphilis when five years old by kissing a prostitute. When eighteen she had failure of the light reflex and of knee-jerks, disturbance of cutaneous and deep sensation in the lower limbs, hypotonia, Romberg's sign, and ataxia. Halban's patient was likewise a girl. It seems strange that these three cases should have occurred in females, as tabes is more common in the male sex, at least among adults. Halban's² patient was twenty-three years old when she was observed

¹ *Revue Neurologique*, January 15, 1902, No. 1, p. 56.

² *Wiener klin. Wochenschrift*, November 14, 1901, No. 44, p. 1131.

by him. She had Argyll-Robertson's phenomenon, unequal pupils, lost knee-jerks, sensory disturbances, vesical symptoms, and beginning optic atrophy. She contracted syphilis from a wet-nurse.

A case of tabes in a child, aged six years, has been observed by H. Idelsohn.¹ He believes that he can eliminate the possibility of syphilitic pseudotabes in his case. He calls attention to the fact that no case of tabes in childhood without hereditary syphilis exists—a statement which is not correct—and that when the disease does occur at this early period of life the female sex is as frequently affected as the male—which is not true of tabes in adults, because more adult males become syphilitic than females.

Martin Brasch² has recently added one more case of tabes in childhood to the small number of cases now known. His patient was a girl of fifteen at the time she came under his observation, and had inherited syphilis. Brasch has no sympathy with those who have attempted to describe a symptom-complex for tabes occurring in youth, different from that in adult age. No case of early tabes without syphilis has been observed; this is certainly a strong argument for the syphilitic etiology of tabes. Although a parent with tabes may have a child with the same disease, as in a few reported instances, it is not tabes that is transmitted but syphilis—according to Brasch—and, therefore, the name “hereditary tabes” is not a good one. Brasch reports three cases of tabes, or tabes and parietic dementia, in husband and wife. This occurrence of these related diseases in the married is also used as an argument in favor of the syphilitic etiology of these diseases, and even more striking, though rare, is the occurrence of tabes in persons still manifesting the signs of secondary or tertiary syphilis.

Three cases of early infantile tabes due to congenital syphilis are reported by James.³ The author believes that if careful examination of the pupils and nervous system were undertaken in more cases of congenital syphilis we should find Argyll-Robertson pupils and absent knee-jerks more frequently than is usually supposed.

A case is reported by Martin Bloch⁴ in which the symptoms of tabes seem to have begun when the boy was about thirteen or fourteen years old.

RIGIDITY OF IRIS AS THE ONLY SIGN OF TABES. The diagnosis of tabes in the early stages is often very difficult and sometimes impossible. A case in which the only sign of tabes was rigidity of the iris to light was observed by Cassirer and Strauss,⁵ and a necropsy showed

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 3 and 4, p. 267.

² Ibid., vol. xx., Nos. 5 and 6, p. 344.

³ Lancet, December 28, 1901, p. 1788.

⁴ Neurologisches Centralblatt, February 1, 1902, p. 113.

⁵ Monatsschrift f. Psychiatrie und Neurologie, October, 1901, p. 241.

that the only pathological manifestation of tabes was degeneration of a portion of each eighth posterior thoracic root. No satisfactory explanation for the failure of the light reflex was obtained. The authors conclude that the degeneration of two posterior roots was sufficient evidence that the case was one of tabes, and there seems to be no good reason why we should not accept this verdict. The case was clinically and pathologically tabes in its earliest stages, but we should probably err very greatly if we should conclude that every case in which Argyll-Robertson pupil exists alone is tabes. It seems very strange that notwithstanding the efforts that have been made to detect the cause of this pupillary sign the results have been unsatisfactory.

The case to which I have just referred seemed to be an unusually favorable one for investigation, and yet Cassirer and Strauss were only able to conclude that the cause was not in the alteration of the spinal cord, and not in any pathological change in the region of the oculomotor nucleus, so far as the Marchi method permitted lesions to be detected.

Syphilitic lesions were found in several organs of the body. This is important, because some have urged as an argument against the syphilitic nature of tabes that indisputable syphilitic lesions are not found associated with tabes.

LOCATION OF THE LESION CAUSING PARALYSIS OF THE IRIS. The sympathetic system, and the structures closely related to it, have been too much neglected in the study of the pathology of the nervous system, and the evidence that A. Marina¹ offers regarding the changes of the ciliary ganglion as a cause of rigidity of the iris is refreshingly new. He has found that in all his examined cases of general paralysis, in which the reaction of the iris was good, the ciliary ganglion and the ciliary nerves were normal; and in those cases in which the reaction of the iris was imperfect, and in cases of tabes, the ciliary ganglion, and often the ciliary nerves, were degenerated. The ciliary ganglion seems to have, therefore, a great importance in the causation of the iritic phenomena of tabes and parietic dementia. These findings are valuable, because the investigations on the Westphal-Edinger group of cell bodies in the oculomotor nucleus, regarded by some as the nucleus of the nerves supplying the inner muscles of the eyes, have frequently been disappointing. Marina does not deny that a pupillary centre may exist in the brain, but it does not seem to have the importance of the ciliary nucleus. Those who wish to find out the pathological conditions underlying the pupillary phenomena must direct their attention to this small ganglion within the orbit.

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xx., Nos. 5 and 6, p. 369.

IRREGULARITY OF THE PUPIL AS A SIGN OF TABES. Joffroy and Schrameck¹ believe that irregularity of the pupil, unless it is a congenital anomaly or the result of anterior or posterior synechia, is seen almost always and only in cases in which the iris is affected or is about to be affected; in tabes, general paralysis, or syphilis. This irregularity of the pupil is usually present when the Argyll-Robertson phenomenon exists, and at first is usually unilateral, and may precede any alterations of the iritic reflex.

Babinski also has seen the irregularity of the pupil precede the loss of motion of the iris, and the latter sign he regards as positive proof of syphilitic infection, and he bases this opinion on the fact that a tabetic patient is never seen with initial lesions of syphilis because he is already syphilitic.

Joffroy does not accept this opinion, but holds that there is a small number of patients with tabes or general paralysis of the insane who have not contracted syphilis, and that irregularity of the pupil and the Argyll-Robertson phenomenon may, in a few cases, develop when syphilis has not been contracted, although usually they are indicative of syphilis. During the eight years he has been connected with the Sainte-Anne Hospital for the Insane he has seen only one patient with paresis who had acute gonorrhœa, and yet there could be no immunity against gonorrhœa. The inoculations with syphilis in patients suffering from paresis, reported by Krafft-Ebing some time ago, are not proof that the patients had already contracted syphilis, inasmuch as the inoculations produced no syphilitic manifestations, because there is no proof that the material inoculated was capable of producing a chancre.

CRISES OF TABES. The crises that may occur in tabes are numerous, and among those with which we recently have become familiar are the *fever crises* of Pel, but the cases in which these occur appear to be very rare, or else they are overlooked, the fever being attributed to some other cause. Indeed, we can hardly be too cautious in making a diagnosis of *crises fébriles*, as they have been called. Bruno Oppler² believes he has observed this new symptom of tabes. His patient, who doubtless had tabes and gastric crises, began to suffer from attacks different from those he had previously had. Vomiting did not occur, but there were lancinating pains in the extremities, chill, and intense prostration. The temperature taken in the axilla registered 40.4° C. The spleen was not swollen and herpes labialis did not develop. By the following morning the temperature had fallen to 39.2° C., and during the day gradually became normal. These attacks occurred

¹ Revue Neurologique, March 31, 1902, p. 275.

² Berliner klin. Wochenschrift, April 14, 1902, p. 334.

several times, and always with lancinating pains, and without gastric symptoms. Phenacetin administered soon after the attack began was useful in checking it. Oppler regards his case as very similar to Pel's. Malaria, osteomyelitis, herpes with fever he believes he can exclude, and he, therefore, concludes that the attacks in his case should be regarded as "temperature crises"—a name proposed by himself. The cause of these attacks is unknown.

Otfrid Förster defines tabetic crises as the occasional appearance of motor and sensory symptoms from irritation in a certain organ. The most common and best known are gastric crises, but we have also laryngeal, bronchial, pharyngeal, œsophageal, rectal, renal, vesical, urethral, clitoric, vulvovaginal, and cardiac crises, and still others. Crises affecting the organs of special sense, taste and smell, have been described by Umber. These disturbances are of an unpleasant character, the taste or smell in such attacks being very disagreeable. Förster describes the tabetic crises as follows: The *gastric crises* are attacks of intense pain in the stomach and left epigastrium, often associated with headache and pronounced hyperæsthesia of the skin of the abdomen, especially of the left epigastrium, and tenderness to touch in these regions. Vomiting occurs, first of food ingested, then of seromucus, and, finally, of bile-stained material. Hypersecretion of the gastric mucous membrane occurs, with excess of hydrochloric or lactic acid. The attack is not always so complete as that here described.

Laryngeal crises are attacks of tickling in the larynx, with a feeling of compression in the larynx, hyperæsthesia of the laryngeal mucous membrane, severe attacks of coughing as in pertussis, spasm of the vocal cords, dyspnœa, and stridor. Hypersecretion of the laryngeal mucous membrane is usually not prominent. These attacks are caused by particles of food or mucus passing into the larynx, by cold air, irritating vapors, examination of the larynx, or by pressure over the recurrent laryngeal nerve. I may mention here that one of my patients who suffered from laryngeal crises had so severe an attack while being examined by an experienced laryngologist that it seemed almost necessary to perform tracheotomy at once. Persons are reported to have died in laryngeal crises, and tracheotomy has been performed for relief of the symptoms in more than one case.

Bronchial crises are attacks of severe coughing, expiratory dyspnœa as in bronchial asthma, resulting from spasm of the bronchial muscles, and excessive secretion of mucus from the bronchial mucous membrane.

Pharyngeal crises are attacks of a sensation of compression of the pharynx, violent and oft-repeated movements of swallowing, excessive secretion of mucus and saliva.

Œsophageal crises are attacks in which a sense of constriction is experienced throughout the œsophagus, with globus and excessive secretion of mucus.

Intestinal crises are attacks of violent pain in the abdomen with increased peristalsis, diarrhœa, and hypersecretion from the intestines.

Rectal crises are attacks of burning and pain in the rectum, desire for defecation, with discharge first of feces and then of seromucus.

Renal crises are painful attacks resembling renal colic, often with polyuria.

Vesical crises are attacks of burning sensation at the neck of the bladder with painful desire for micturition, although only a few drops of urine may be discharged.

Urethral crises are attacks of severe burning pain along the urethra, swelling of the penis with painful erection and secretion of seromucus in the urethra.

Clitoric crises are attacks of voluptuous sensation, erection of the clitoris, peristalsis of the uterus, and excessive secretion from the mucous membrane of the uterus and vagina.

Cardiac crises are attacks of severe pain in the region of the heart extending through the body to the vertebral column and left scapula, and often down the left arm, with a sensation of oppression over the heart, anxiety, and tachycardia.

Förster points out that in almost all of the crises there are periodic attacks of irritation of the sensory nerves of the organ implicated, either as pain or paræsthesia (voluptuous sensation, anxiety, and oppression), also of irritation of the motor nerves of this organ, as vomiting, forced micturition, tachycardia, etc., and of increased secretion of this organ. He believes that the constant hyperæsthesia of the mucous membrane and the increased reflex irritability, and the production of a paroxysm by slight irritation, indicate that the crisis is the result of a constant irritation of the sensory fibres of the organ in question.

Laryngeal crises have been explained as the result of paralysis of the laryngeal muscles, but this view Förster¹ does not accept, and it seems to me properly. As he says, cases of laryngeal paralysis may exist in tabes without the crises, and this paralysis is far more common than is generally supposed—in about 60 per cent. of the cases. He has never observed a case of laryngeal crises without some disturbance of function in the laryngeal muscles. The laryngeal crisis is primarily a disturbance of sensory function, as shown in a case observed by him in which during the attack hyperæsthesia of the larynx existed, while

¹ Monatsschrift f. Psychiatrie und Neurologie, April, 1902, vol. xi., No. 4, p. 259.

at other times there was ataxia of the vocal cords with hyperæsthesia and diminished reflex irritability.

Although *gastric crises* are not very common, gastric disturbance of some sort is not rare in tabes, as Förster states ; in other cases irritation of the larynx is more easily produced than in healthy persons. Lancinating pains in the limbs resemble the crises, but are not associated with disturbance of motor function, except in the involuntary jerkings of the limbs as seen in tabes. I may add to Förster's statement, that I have seen these involuntary jerkings of the limbs in spinal syphilis, and possibly they were produced reflexly by irritation of the sensory fibres. He devotes considerable space to a consideration of these involuntary movements of tabes, and it is well he does so, as they have in a measure been ignored by many writers.

Pseudotabes. A case reported by C. K. Mills,¹ and resembling in some respects one of tabes, was very difficult to diagnose. A man, seventy-five years of age at the time of his admission to the hospital, had been in good health until twelve years previously, when he began to have attacks of pain in the back, which he attributed to cold, wet, and overexertion. Six years before admission to the hospital he began to show weakness in his right leg, which increased, the left also becoming affected. Two years later ataxia of station became prominent, and a year later he had to use a cane in walking, and at about the same time dull aching and shooting pains in the legs occurred. Later, but at a time not exactly recorded, he had trouble in holding his urine. A year after admission to the hospital tactile and pain sensations were normal ; temperature sense was uncertain, especially at the top of the feet and on the outside of the thighs. Station and gait showed inco-ordination. The upper as well as the lower extremities were markedly ataxic. The knee-jerks were exaggerated. The pathological examination was made by me. The alteration of the spinal cord was unimportant, the ventral and dorsal roots everywhere were normal, but the left internal plantar nerve was much degenerated, and muscle from the sole of the left foot contained many bundles of atrophied muscular fibres. The nerve bundles within the muscular tissue were much degenerated. The case was one of degeneration of the peripheral ends of nerve fibres with some degeneration of the muscles.

It is interesting to examine the clinical history in the light of these findings. Too little attention has been paid to chronic forms of neuritis and they are likely to be mistaken for spinal cord diseases. The weakness of the limbs, the ataxia of gait and station, and the ataxia in the movements of the upper limbs, shooting pains in the

¹ Journal of Nervous and Mental Disease, August, 1901, p. 435.

lower limbs, difficulty in holding the urine, and some impairment of objective sensation can all be easily explained by chronic degeneration of the nerves, especially of the peripheral portions. Absence of marked atrophy must be explained by the slowness of the degenerative changes. The presence of exaggerated knee-jerks is certainly remarkable, but such a condition of the patellar reflex in neuritis has been reported more than once, although it is very uncommon. We must assume that the anterior crural nerve was not affected. Unfortunately, this nerve was not obtained for examination.

Such a case as this described by Mills has doubtless repeatedly been diagnosed as combined systemic disease, and it is exceedingly important to know that neuritis may cause such a clinical picture. It is questionable whether a better prognosis can be given in a case of this slowly developing degeneration of nerves than in a case of degeneration of the posterior and lateral columns of the cord.

Juvenile Paresis. Régis¹ believes that juvenile paretic dementia is much more common than it was formerly believed to be, and that now at least a hundred reported cases could be collected. He regards as juvenile cases only those occurring before the twentieth year, and these are almost invariably the result of inherited syphilis, although Westphal has reported a case in which syphilis was acquired at the seventh year and paresis developed ten years later. Ballet believes that the period intervening between the acquisition of syphilis and the appearance of tabes or paresis is not so long as was formerly believed—ten to twelve years—and he has observed a number of cases of tabes and paresis in which the nervous symptoms appeared five years or even three years after the syphilitic infection. The shortest period observed by Régis was six years, and the average period has been twelve years. Régis does not believe that syphilis is the only cause of paresis.

Paretic dementia is not common in children, and yet in the last ten years twenty cases have been observed in Krafft-Ebing's clinic. Hirschl,² in comparing these cases with one another, has found hereditary syphilis and neuropathic taint very common, as the former was definitely established in seventeen of the twenty cases. Nine cases occurred in mentally deficient children. Twelve were in males and eight in females. The disease in these twenty cases began between the ages of eight and twenty years, and the average duration was three years and three-quarters, although two cases lasted seven years. Most of the patients had not reached puberty, as nine of the males and five of the females were sexually undeveloped.

¹ La Semaine Médicale, August 14, 1901, No. 34, p. 266.

² Wiener klin. Wochenschrift, 1901, No. 21, p. 515.

Friedreich's Disease and Hereditary Cerebellar Ataxia. Few men have done what Pierre Marie has attempted to do, viz.: to establish a new disease from certain published cases without ever having seen a case of the type himself. Patrick¹ says it savored somewhat of genius or effrontery, and that the obstacles in the way of establishing hereditary cerebellar ataxia as a distinct disease are diversity of symptoms in the original basic sixteen cases, absence of uniformity of subsequent cases reported as examples of this disease, lack of careful post-mortem examinations in cases which were clinically sufficiently typical, variation in post-mortem findings, and several necropsies which strongly tend to controvert Marie's views. The characteristics of Marie's type are heredity, inception after the age of twenty, exaggeration, or at least preservation of the deep reflexes, defective pupillary reactions, involvement of the optic nerve and ocular muscles, and absence of deformity. As Patrick points out, in mode of onset and progress, character of motor disorder, frequent absence of Romberg's sign, presence of nystagmoid jerkings, defect of speech, unimportance of mental symptoms and lack of prominence of sensory troubles, the disease resembles very closely Friedreich's ataxia. He reports a case which for convenience he has called by the name of hereditary cerebellar ataxia, but he adds that if there really be such a malady he is in doubt as to whether he is reporting an example of it or not.

The difficulties in diagnosing between Friedreich's disease and hereditary cerebellar ataxia are well shown in a paper by W. Seiffer,² in which a number of cases of the former malady are reported. Seiffer calls attention to the early commencement of this disease. The opinion of Friedreich, Schultze, and others, that it begins usually at the age of puberty seems to be incorrect, as according to Seiffer's observations it usually begins earlier than this, even in the second or third year of life, and from the statistics obtained from the cases reported by many authors it appears that in by far the greater portion of cases it begins before the fourteenth year. It does not appear to be a congenital disease like Little's disease, but attacks children born apparently healthy when they have reached their tenth or twelfth year. A disposition to this disease is congenital, but Seiffer believes that the disease is seldom transmitted directly from parent to child. Nystagmus was not present in all of his cases, and in one case Babinski's reflex was obtained. He refers to the fact that this reflex with loss of the knee-jerk has often been seen, and I may add that in a case of Friedreich's ataxia reported recently by me this combination

¹ Journal of Nervous and Mental Disease, March, 1902, p. 129.

² Charité Annalen, twenty-sixth year, p. 413.

of symptoms was present, while in two other cases of Friedreich's ataxia I was unable to obtain the Babinski reflex. Seiffer attributes the deformity of the vertebral column occurring in this disease to weakness of the muscles of the back. He has observed forced laughter (*Zwangslachen* of the German authors) in Friedreich's ataxia, but psychical disturbances are universally acknowledged to be rare.

Seiffer believes that the points of distinction advanced by Marie for his hereditary cerebellar ataxia are insufficient, and, therefore, he is in favor of combining this type with Friedreich's disease under the name of hereditary ataxia, or family ataxia, inasmuch as they are one disease and in some cases the spinal cord is affected most, in others the cerebellum.

Syphilis of the Nervous System. It seems very strange that in some cases of syphilis symptoms of implication of the nervous system develop very soon after the primary infection, and in others not for many years. I have seen the Brown-Séquard form of paralysis develop from spinal syphilis while the body was still covered by the syphilitic eruption in a case under the care of F. X. Dercum. Mingazzini¹ has paid special attention to this early form of cerebro-spinal syphilis, and has reported a number of cases, which he believed were the result of arterial alteration. This early syphilis has often a very rapid course with fatal termination. Advanced age—*i. e.*, over forty years—and alcoholic excesses may be causes for the rapid course of early syphilis, but Mangazzini confesses that in some cases we can find no satisfactory cause. It is important to remember that *lues præcox* of the nervous system often is exceedingly dangerous and seems to be more so in recent years than formerly.

Disseminated Sclerosis. Irma Klausner² has studied the clinical histories of 126 cases of disseminated sclerosis to determine the influence on the disease of heredity, congenital disposition, sex, occupation, infectious diseases, intoxications, overexertion, taking cold, and trauma. No etiological factor was obtained in 14 cases, heredity—*i. e.*, some disease of the nervous system in the family—was shown in 31, a congenital tendency to the disease in 23, infectious disease as a cause in 25, intoxication in 23, trauma in 26, overexertion in 9, and taking cold in 13. The disease began most frequently between the ages of sixteen and forty years, and was rare in children. In 2 cases it seemed to be congenital. In 1 case it began at the age of sixty-three years, and in another at the age of sixty-one years. Several etiological factors were found in many of the cases. It seems from these statistics

¹ *Monatsschrift f. Psychiatrie*, March, 1902, p. 161.

² *Archiv f. Psychiatrie*, vol. xxxiv., No. 3, p. 841.

that infectious diseases as a cause of disseminated sclerosis are not so important as Marie believed, and that the disease may be produced in many ways.

PARALYSIS OF ASSOCIATED MOVEMENT IN MULTIPLE SCLEROSIS. In a case of disseminated sclerosis reported by Raymond and Cestan¹ a sclerotic patch was found in the oculomotor and trochlear nuclei. During life the eyeballs were in the median position, and ptosis was not present. The irides reacted well to light and in accommodation. The fundus was normal. The lateral movements of the eyeballs to either side were much restricted. There was also marked paralysis of the elevators of the eyeballs, but the depressors were little affected. The power of convergence was almost normal. This was, therefore, a case of paralysis of associated movement of the eyeballs caused by a lesion of the oculomotor and trochlear centres.

MULTIPLE SCLEROSIS AND MULTIPLE MYELITIS. Acutely developing ataxia was attributed by Westphal many years ago to multiple myelitis. The condition is a rare one and seems to be the result of infection, and usually occurs during or following some infectious disease. The inflammatory foci are probably scattered throughout the central nervous system. In some cases the ataxia may disappear; in others it may be persistent. The pathological changes are not well known, as so far no opportunity has been given for a study of the early lesions.

Disseminated myelitis producing the symptoms of transverse myelitis is better known, both clinically and pathologically, than that causing the acute ataxia. Finkelnburg² refers to these conditions and to the allied spinal-cord changes occurring in anemia and wasting disease. He says he does not know whether the latter changes extend to the medulla oblongata and brain or not. If he had read the English literature on the subject he would have found that Putnam and Taylor, and later Spiller, have examined portions of the nervous system above the spinal cord in cases of anemia.

The disseminated myelitis may produce symptoms so much like those of acute multiple sclerosis that a differential diagnosis may be impossible, and, indeed, some investigators believe that the two diseases may be one process. In some cases of multiple sclerosis terminating fatally within a short time lesions have been found very much like those of disseminated myelitis, and Finkelnburg reports a case in which foci like those of disseminated sclerosis were found in association with inflammatory foci within the spinal cord.

¹ *Revue Neurologique*, January 15, 1902, No. 1, p. 52.

² *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xx., Nos. 5 and 6, p. 408.

FREQUENCY OF MULTIPLE SCLEROSIS. C. L. Dana has recently said that among 3000 private cases of which he had histories, there were only ten cases of multiple sclerosis. Out of about 600 cases at the out-door clinic during the past year there were only 2 cases diagnosed as multiple sclerosis, and even these were questionable. In the Bellevue Hospital 12,000 patients were received annually, and one of his assistants was constantly on the watch for cases of nervous disease, yet he had not found more than one or two new cases of multiple sclerosis each year. It was evident then that multiple sclerosis was very rare in private practice, and decidedly more rare than in the clinics of Europe. Of course, some mistakes in diagnosis might occur.

G. M. Hammond has examined 3000 private records and 7000 records from the clinic, extending over the past ten years. In the former there were 729, or about 25 per cent., with organic diseases. Of these cases 15, or about 2 per cent., had multiple sclerosis. In the clinic cases there were 2400 organic cases, and of these 32 had multiple sclerosis, or 1.33 per cent. He could not accept the statement that more cases of multiple sclerosis occurred in dispensary practice. Of the combined private and dispensary cases 47 had multiple sclerosis, or 1.5 per cent.

Goodhart reported for M. Allen Starr that he had examined 10,056 cases in the clinic and had found 27 recorded as multiple sclerosis. In 6 of these the diagnosis was doubtful, in other words, there was 1 positive case in 475. Of the 4809 males, there was 1 case of positive multiple sclerosis in 437, while of the 4898 females there was 1 such case in 700. With regard to the age, the records showed that among the males there was only 1 occurring after the age of sixty years, while among the females all developed the disease under thirty-one years of age, and the earliest case occurred at the age of sixteen months.

B. Sachs said that he had examined the records of 2000 cases in private practice and had found 13 positive cases of multiple sclerosis and 2 doubtful ones. There were 41 of tabes, 69 of cerebro-spinal syphilis, 38 of general paresis, 14 of intracranial tumors, 15 of paralysis agitans, 37 of apoplexy, and 15 of infantile cerebral palsy. He thought we had a faulty impression of the relative frequency of the disease in Europe. According to one of the latest European works, the author states that he had seen 5500 private cases of nervous diseases, and in this number had met with 38 cases of multiple sclerosis. This would give 1 in 144, whereas, Sachs had found 1 in 150. It was most important in considering such figures to know from what classes the material had been drawn. Many cases diagnosed in this country as chronic myelitis were diagnosed in Europe as incipient cases of multiple sclerosis before the characteristic symptoms had developed.

Joseph Collins¹ has had, in 1901, 1470 cases of nervous diseases at his clinic, and among these 5 were cases of multiple sclerosis. In 1900, 1368 cases were seen, of which 5 were cases of multiple sclerosis. In 1899 there were 1400 cases and 5 of multiple sclerosis; in 1898 there were 1270 cases, with 3 of multiple sclerosis. Thus, in the four years the clinic had been under his personal direction, there had been approximately 6000 cases of nervous diseases, with 19 cases of multiple sclerosis. From 1890 to 1897 there were 28 cases of multiple sclerosis in a total of about 4000 cases of nervous disease. According to his experience, therefore, multiple sclerosis is a very rare organic disease of the nervous system.

UNILATERAL ASCENDING PARALYSIS FROM MULTIPLE SCLEROSIS. Three cases of progressive unilateral ascending paralysis have been reported (Mills, Spiller, and Potts). The case observed by Potts² was as follows: A young man, aged nineteen years, noticed about four years ago that he dragged his right foot, and wore off the sole of his right shoe at the toe. Two years later diplopia was noticed and disappeared after five months. Five months preceding the report of the case weakness of the right arm was noticed. The patient never had convulsions, unconsciousness, or vertigo. The right upper and lower limbs are now weaker than the left, and the former are atrophied, but the muscles all respond well to the faradic current. The tendon reflexes of the right upper and lower limbs are much exaggerated and Babinski's reflex is present in the right foot. The right side of the mouth droops a little, and the nasolabial fold is not so well marked upon that side. In smiling the mouth is drawn markedly to the left. The muscles of the right side of the throat are paretic. Marked nystagmus, paresis of the left inferior rectus and paleness of the temporal halves of the disks are present. While intention tremor was not observed and the patient had never had epileptic or apoplectiform attacks, Potts believes his case was one of disseminated sclerosis on account of nystagmus, paresis of the external ocular muscles, paleness of the temporal halves of the optic disks, increased deep reflexes, and some disturbance of speech. The diagnosis seems to be correct. It is probable that many causes will be found for the unilateral type of progressive ascending paralysis, just as they have been found for the bilateral type.

Pseudosclerosis. The pseudosclerosis of Westphal and Strümpell resembles disseminated sclerosis in its symptomatology. J. Bäuml³

¹ Journal of Nervous and Mental Disease, May, 1902, p. 288.

² Ibid., October, 1901, p. 559.

³ Deutsche Zeitschrift f. Nervenheilkunde, vol. xx., Nos. 3 and 4, p. 265.

has observed this pseudosclerosis in four sisters, and it seemed probable that the father also was afflicted with this disease. In Bäumlin's cases the disease began between the ages of two and a half years and three and three-quarter years. This was a much earlier manifestation than in the cases previously reported, and the duration of the disease was also shorter in Bäumlin's cases than in the others. The disease began in his cases with weakness and uncertainty of movement of the lower limbs, so that the children often fell. There were observed intention tremor, nystagmus, temporary strabismus, exaggerated tendon reflexes, mental failure, and epileptiform attacks. The bladder and rectum were not affected, and the limbs were not paralyzed. A necropsy was obtained in one case, but nothing important was found. The attempt of Pierre Marie to class the cases of pseudosclerosis under hysteria seems unwise. We shall err greatly if we make hysteria include every disease that seems to have no pathology detectable by our means of examination.

Bäumlin makes other important statements in this paper, one of which is that sensory disturbances, atrophy, and pseudohypertrophy of muscles may occur in Friedreich's disease.

Scoliosis in Syringomyelia. S. Nalbandoff¹ has endeavored to find out the cause of scoliosis in syringomyelia, and with this object in view he has studied the vertebræ from a case of syringomyelia with kyphoscoliosis. He believes that the deformity of the spinal column has a great resemblance to that produced by arthritis deformans, and this conclusion he reaches after a chemical and microscopic examination of the vertebræ. Some have held that the scoliosis was the result of muscular changes, and others that it was caused by trophic lesions of the vertebræ. Although Nalbandoff's view, that the deformity of the spinal column is a form of arthritis deformans, has much in its favor, neither Nalbandoff nor anyone else has told us why displacement of the vertebræ occurs in syringomyelia and more rarely in tabes.

ARTHROPATHIES IN SYRINGOMYELIA. Arthropathy of the acromioclavicular articulation alone is very uncommon in syringomyelia, and C. Hödlmoser,² after searching the literature, has been unable to find a single case reported. He has observed this condition in a person afflicted with syringomyelia. The implication of this articulation in association with arthropathy of the shoulder-joint is not so rare.

VESICAL SYMPTOMS IN SYRINGOMYELIA. Vesical symptoms have been regarded by many authors as unimportant in syringomyelia, but J. Albarran and G. Guillain³ attempt to show that this opinion is not

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xx., Nos. 3 and 4, p. 248.

² Wiener klin. Wochenschrift, 1901, No. 26, p. 630.

³ La Semaine Médicale, December 4, 1901, No. 50, p. 393.

correct. From their study of cases at the Bicêtre they have become convinced that vesical disturbances, especially retention, are common in syringomyelia, and that this retention may be only partial.

Convulsions with Gliomata of Cord. In a case observed by O. Heubner¹ numerous gliomata were found in the thoracic region of the spinal cord. During life the child, who was only seven years old at the time of her death, had had tonic convulsions, mostly confined to the upper limbs. There are some cases on record that give reason to believe that contractions, especially the tonic form, may be the result of lesions of the spinal cord. These spasms of spinal origin are not common, and every case with necropsy in which they were observed is of importance in increasing our knowledge of their nature. We must be cautious, however, in accepting the opinion that in Heubner's little patient the numerous gliomata of the spinal cord caused the spasms, because internal hydrocephalus existed. The latter condition may possibly have been produced by the extension of meningitis to the lining of the ventricles. The posterior columns were found degenerated by Heubner, and this degeneration was attributed by him to a primary proliferation of the neuroglia similar to the formation of gliomata in other parts of the spinal cord, and the possibility of tabes could not be entertained, especially on account of the youthful age of the patient. This case offers several interesting suggestions. Occasionally tabes has been described as associated with syringomyelia, and we might ask whether the tabes were not merely primary proliferation of the neuroglia in these cases, and not the result of degeneration of the posterior roots, as in true tabes. There was no evidence of cavity formation in the cord in Heubner's case, and the reason for this possibly might be found in the short duration of the pathological process, and the case might be employed in support of the view that syringomyelia is not always caused by malformation of the spinal cord, but may be, as many now hold, produced by degeneration of gliomatous tissue, or even in other ways.

Abscess of the Spinal Cord. Abscess of the cord is rarely found at necropsy, but in a recent case observed by J. Silfvast² it was associated with retrobulbar neuritis. The case is a very interesting one. A man, supposed to have been previously healthy, became completely blind in both eyes within a few days, and had at the same time severe pain in the forehead and eyeballs. Nothing abnormal could be determined by an ophthalmoscopic examination, and the blindness was therefore supposed to be the result of retrobulbar neuritis, although

¹ Archiv f. Psychiatrie, vol. xxxiv., No. 2, p. 626.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xx., Nos. 1 and 2, p. 94.

no cause for the neuritis could be discovered. About two weeks after the commencement of the blindness weakness of the left lower limb developed rapidly. The Brown-Séquard symptom-complex existed for about two days, and then symptoms of a transverse spinal lesion were detected, viz.: paraplegia of the lower limbs, loss of tendon reflexes, anæsthesia of the lower part of the body, and paresis of the upper limbs. Such a symptom-complex suggested the existence of a lesion developing acutely on the left side of the spinal cord, but soon extending to the entire transverse area of the cord and as high upward as the cervical swelling. The diagnosis of abscess of the spinal cord was made on account of these symptoms, although it is difficult to see how one could venture more than a diagnosis of acute myelitis. An abscess was found extending from the fourth cervical segment to the upper thoracic region, and was probably secondary to a purulent pulmonary process. Streptococci were detected in the spinal cord.

Hæmatomyelia. Localization of lesions in the spinal cord is important in diagnosis and surgery, and Minor's¹ attempt to make a symptom-complex indicative of injury to the cord just above the conus is very interesting. The conus is usually described as that portion of the cord which extends from the commencement of the filum terminale to the exit of the third sacral root. An injury confined to the conus causes no paralysis of the lower limbs, but does cause paralysis of the bladder, rectum, and the sexual organs, and anæsthesia about the anus. When a lesion such as hemorrhage is confined to the gray matter of the cord just above the centres for the bladder and rectum, or to the roots coming from this part, and the white columns are not invaded, a peculiar symptom-complex is produced, according to Minor. As the conus and white columns are not implicated, the bladder and rectum functionate normally, and as the lesion does not extend as high as the fourth lumbar segment, the knee-jerk is preserved; but paralysis in the distribution of the sacral plexus, especially in that of the peroneal nerve, occurs. The peroneal group of muscles is atrophied and presents reaction of degeneration and sensory disturbances, and steppage gait is produced—i. e., there is foot-drop. If the lesion extends sufficiently high in the cord it produces paresis of the flexors on the posterior surface of the thigh and of the gluteal muscles. The portion of the cord affected when such a symptom-complex is observed lies between the fourth lumbar and third sacral segments, and to this portion Minor gives the name of epiconus.

It is worth while to be able to diagnose a lesion confined to the gray matter or nerve roots of the fifth lumbar and first and second

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xix., Nos. 5 and 6, p. 331.

sacral segments, and when such a lesion develops rapidly it is usually hæmatomyelia.

Anterior Poliomyelitis. PARALYSIS OF THE RADICULAR TYPE IN ANTERIOR POLIOMYELITIS AND CYTODIAGNOSIS. Dupré and Huet say that in acute anterior poliomyelitis the paralysis and atrophy of the muscles may be localized like that caused by lesions of the roots. Radicular lesions, as the term is employed by French writers, may sometimes be intravertebral, at other times extravertebral. According to Dejerine, the radicular topography is the rule in acute anterior poliomyelitis. Dupré and Huet¹ report a case with localization in the distribution of the superior roots of the brachial plexus. A child had acute paralysis of the right upper limb, with fever, the other limbs not being implicated. Fifteen days later the right hand could be used, but the forearm remained in extension on the arm, and the arm hung by side of the body. The reaction of degeneration was obtained in the Duchenne-Erb group of muscles: the supinator longus, brachialis anticus, biceps, and deltoid—*i. e.*, in the distribution of the nerves derived from the fifth and sixth cervical roots.

Cases of cerebro-spinal meningitis with paralysis and muscular atrophy like that occurring in acute anterior poliomyelitis or polyneuritis have been reported. Rendu has described a case of cerebo-spinal meningitis, with paralysis, confined to the distribution of the nerves from the upper roots of the brachial plexus. There may, therefore, be much difficulty in diagnosing between acute anterior poliomyelitis and lesions of the spinal cord or roots associated with cerebro-spinal meningitis. The fluid obtained by lumbar puncture may help in the diagnosis by a microscopic study of the cells obtained. In favor of the diagnosis of poliomyelitis in Dupré and Huet's case were the appearance of the paralysis on the fourth day of the disease—in cerebro-spinal meningitis paralysis, when it occurs is later in development—the absence of pain and of rigidity of the upper limb and neck, and the rapid disappearance of paralysis in a certain number of muscles. The case seems, therefore, to be another example of spinal muscular atrophy of radicular topography.

In confirmation of the statements of Dupré and Huet a case of cerebro-spinal meningitis in the form of infantile spinal paralysis is published in the same journal by Raymond and Sicard.² These authors say that two recent methods—the bacteriological and the cytological (cytodiagnosis) study of the cerebro-spinal fluid obtained by lumbar puncture—have been of much service. They have permitted a diagnosis to be made in numerous cases as to the tuberculous

¹ *Revue Neurologique*, April 30, 1902, p. 321.

² *Ibid.*, p. 317.

or non-tuberculous nature of the meningitis. One method complements the other, but in their opinion the cytodiagnosis is the more valuable. Their case was as follows: A child, aged three and a half years, began to show a disinclination to play, complained of headache, was restless in sleep, and had a capricious appetite. Soon it was obliged to remain in bed; the headache became more severe, the spinal column became painful, the neck became rigid, the joints swelled, and prostration and fever were pronounced. Some improvement occurred, and then paralysis of the upper limbs, of the superior radicular type, was observed, as in Dupré and Huet's case. The rigidity of the neck and the vertebral pain suggested the diagnosis of meningitis, and therefore lumbar puncture was done. A ratio of eighty polynuclear to twenty mononuclear cells was obtained from an examination of the fluid. A puncture made fifteen days later showed a condition of lymphocytosis. The ratio now was seventy mononuclear cells to thirty polynuclear cells. In five cases of typical infantile paralysis Raymond and Sicard studied—one during the period of fever—the cytodiagnosis was negative; the cellular elements were not more numerous than normal in the cerebro-spinal fluid. On account of the polynucleosis in cerebro-spinal meningitis and absence of leucocytosis in anterior poliomyelitis Raymond and Sicard were led to change their diagnosis in the case reported above to radicular brachial palsy occurring with cerebro-spinal meningitis, but they were unable to find micro-organisms.

These authors believe that the same pathogenic agent—the pneumococcus, or meningococcus, or other micro-organism—may by infection or intoxication cause lesions localized to the gray substance of the cord (poliomyelitis), or to the gray substance of the brain (polioencephalitis), or to the spinal roots, or to the peripheral nerves; or may cause more diffuse lesions or meningitis. Meningitis and poliomyelitis have occurred together in epidemics, and the simultaneous occurrence of these two diseases, though not necessarily in the same case, is more than a coincidence.

The cytodiagnosis appears from the French writers to be very valuable. An absence of cellular elements is to be expected in polyneuritis or poliomyelitis, but these elements are found when the meninges become affected. Mononuclear cells (lymphocytosis) are present in the cerebro-spinal fluid when the examination is made at the beginning of the paralytic period in cases in which the meningeal inflammation is localized; polynuclear cells (polynucleosis) are present when the inflammation is extensive.

Progressive Spinal Muscular Atrophy. There are a few cases, with necropsy, reported in the literature which show that degeneration of the nerve cell bodies of the anterior horns of the spinal cord may occur

without alteration of the white columns of the cord, and that progressive spinal muscular atrophy is, therefore, a separate disease from amyotrophic lateral sclerosis. Such a case has recently been reported by Williamson.¹ During the twenty years' duration of the disease no symptoms indicative of implication of the central motor tracts could be detected, and by microscopic examination the crossed pyramidal tracts, from the highest cervical to the lowest thoracic region, presented no evidence of degeneration. We must, therefore, recognize that progressive spinal muscular atrophy is a distinct, although rare, disease.

Infantile Progressive Muscular Atrophy. An excellent summary of the symptoms occurring in this affection is given by L. Bruns.² The disease begins in early childhood, is of gradual development, and is without fever or convulsions. The little patients never learn to walk, or, if they have learned to do so, gradually lose this power. The power of moving the lower limbs in bed is lost, and standing becomes impossible. Weakness and atrophy develop nearly simultaneously in the muscles of the pelvic region and trunk, implicate the iliopsoas and quadriceps femoris, and later extend to the muscles of the upper limbs and neck. The paresis and atrophy are more pronounced in the proximal parts of the limbs, and deformities occur. Reaction of degeneration is obtained in the paralyzed muscles, and fibrillary tremor may be present. The paralysis is flaccid, and the tendon reflexes are lost. Sensory changes do not exist. Bruns has observed three cases of this peculiar disease, so that the number of cases in the literature is twenty-five, and they are reported by only four men (Werdnig, Hoffmann, Bruce, Bruns). Two of Bruns' cases were of slow progress, one child being fifteen and the other twelve years old. This is uncommon, as the disease usually has a rapid course. It differs from the peroneal form of muscular atrophy (Tooth) in that in the latter the atrophy and paralysis begin in the distal parts of the limbs instead of the proximal, and are associated with sensory disturbances.

Not many years ago the distinctions between the muscular atrophy of spinal origin and that believed to be idiopathic—*i. e.*, not of nervous origin—were considered so sharp that no question could be raised as to the unity of the diseases. Gradually, however, cases of progressive muscular dystrophy were reported which clinically were typical, but in which alteration of the spinal cord was found. These cases are not very numerous, but they are sufficiently so to raise grave doubts in the minds of some as to the possibility of all muscular atrophies being

¹ Lancet, July 6, 1901, p. 19.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xix., Nos. 5 and 6, p. 401.

more closely related to one another than we have been wont to believe. Only a few years ago a case clinically one of neurotic muscular atrophy (type Charcot-Marie, peroneal form of muscular atrophy) was found by Oppenheim and Cassirer to be one of muscular dystrophy. Senator is among the recent writers who believe that sharp distinctions do not exist. The most recent type is that of Werdnig and Hoffmann, and only a few cases have been reported. It seems to be hardly known in our country. Senator¹ has observed two cases, in brother and sister, in which this form of atrophy existed. The disease began in very early childhood, so that the children, who had learned to walk, soon became unable to use their legs properly, and had difficulty in sitting up, on account of atrophy of the muscles of the back. There was also atrophy of the muscles of the shoulder girdle and part of the upper arm, and the atrophy in the upper limbs seemed to be extending toward the hands. In one case atrophy was found in the gluteal muscles. Fever had not developed, and the course of the disease was very chronic, so that during one and three-quarter years scarcely any increase in the atrophy was observed. Face, hands, legs below the knees, and feet were not implicated, even after the disease had existed six or eight years. Fibrillary tremor in the atrophying muscles, deformity of the vertebral column, loss of tendon reflexes, and diminution of the electric reactions or even some reaction of degeneration, absence of hypertrophy or pseudohypertrophy, absence of sensory symptoms, absence of psychical symptoms or of disturbance of the functions of the bladder and rectum, completed the symptom-complex. The form of disease described by Senator resembles very closely progressive muscular dystrophy, but in neither of his cases was a necropsy obtained. In the cases of this character, with necropsy, included by Erb under muscular dystrophy, the nervous system, especially the spinal cord, was more or less affected. Werdnig and Hoffmann have shown by microscopic study that this type is of spinal origin, and as such Senator regarded his cases. The fibrillary tremors of long duration are brought forward as evidence of a spinal origin, as these are uncommon in the muscular dystrophy. He believes that the clinical appearances of muscular dystrophy will vary according as the central or peripheral portion of the peripheral motor neurone is first attacked. It must be said, however, that many cases of muscular dystrophy are on record in which even after the most careful microscopic examination no involvement of the nervous system could be found, so that we are not yet prepared to state that a degeneration confined to the muscular system does not exist, but, on the contrary, I think we may

¹ Charité-Annalen, twenty-sixth year, p. 81.

say that it certainly does exist, although border-line cases show that one type may pass into another.

Lateral Sclerosis. We have sufficient evidence that degeneration confined to the pyramidal tracts, and not resulting from a focal lesion, such as hemorrhage or tumor, may occur, but it is certainly very rare. Almost invariably some alteration is found in the nerve cell bodies of the anterior horns of the spinal cord. I have recently reported the following case:¹ A woman, aged fifty years at the time of examination, developed suddenly weakness in her left upper limb, with loss of speech. The power of speech was regained after a day or two, but never again was normal. The weakness almost entirely disappeared from the left upper limb after about three weeks. Two years after the attack she noticed that she was weak in her lower limbs, and the weakness gradually increased so that walking became difficult. The reflexes in all the extremities were exaggerated, and the Babinski reflex was obtained. The gait was not decidedly spastic. The right upper limb was not distinctly paretic, but the left was a little weak. No objective sensory disturbances were found, and no pains were felt in the limbs. Muscular atrophy was not observed, although the palsy of the lower limbs had existed more than a year. The reaction of the irides was sluggish. The left side of the face was slightly paretic, but the right side also probably was not normal. Degeneration of the pyramidal tracts was found extending as high as the pons, but not above this. The nerve cell bodies of the anterior horns of the spinal cord were in part diseased.

In the weakness of the lower limbs, the exaggerated reflexes without muscular atrophy, and the gradual development of the paralysis the case presented the clinical picture of primary lateral sclerosis, and yet the microscopic examination showed that the nerve cell-bodies of the anterior horns were partly diseased.

FAMILY FORM OF LATERAL SCLEROSIS. The pathology of the family form of spastic spinal paralysis beginning in childhood is almost unknown, and E. Bischoff's² two cases in brothers, with necropsy, are therefore of value. The disease was of chronic course; it began, when the patients were each at the age of ten years, with rigidity of the lower limbs, and later the rigidity extended to the upper limbs. Weakness of the muscles and mental symptoms developed. The lateral ventricles of the brain were somewhat dilated, the crossed pyramidal tracts in the spinal cord and the columns of Goll were partially degenerated. The nerve-cell bodies of the anterior horns

¹ *Journal of Nervous and Mental Disease*, May, 1902, p. 265.

² *Jahrbücher f. Psychiatrie und Neurologie*, vol. xxii.

were much diminished in number. The pathological findings in this case suggest amyotrophic lateral sclerosis, but muscular atrophy did not exist. These cases have much resemblance to some of Strümpell's observations, but they were not typical.

Pott's Disease. A very unusual form of spinal tuberculosis observed by E. Dupré and G. Delamare¹ was mistakenly diagnosed as one of Pott's disease. A youth, who had tuberculosis of the lungs and superior maxillary bone, developed scoliosis, and soon complained of general weakness, more marked, however, in the lower limbs, pains in the back, and constipation. Suddenly, while standing, his lower limbs gave way, and he fell. The flaccid paralysis of the lower limbs rapidly became complete, and he had retention of urine and feces, and œdema and disturbance of sensation in the lower limbs. Tuberculosis of the vertebræ was not found at the necropsy, but a large spinal epidural hæmatoma, with tuberculous meningomyelitis, existed. The most interesting features of this case were the presence of tuberculous pachymeningomyelitis without implication of the vertebræ—not the first reported case of this character, however—and the apoplectiform appearance of the paraplegia of the lower limbs. The authors do not explain the sudden paralysis, but we know that this has been frequently observed in meningomyelitis, especially when it is of syphilitic nature.

Changes in the Spinal Cord from Anæmia and Wasting Disease.

In reference to the changes produced in the spinal cord by anæmia, the seven cases, with necropsy, reported by Russell, Batten, and Collier² as examples of a peculiar variety of combined systemic disease are interesting. This paper could not be referred to in my review of last year in *PROGRESSIVE MEDICINE* on account of lack of space, and yet because of its importance I dislike to omit all mention of it. The changes in the cord caused by wasting disease are not well known by all general practitioners, and it is important that they should be.

Russell, Batten, and Collier do not care to use any other name than "combined degeneration," as this has been so well recognized; but by adding "subacute" they hope to make the name exclusive. We owe to Lichtheim the first recognition of degeneration of the spinal cord in association with anæmia, and in this country the cases of Dana, Putnam, and Burr were among the earliest reported. Dana and Putnam have written extensively on the subject. The subacute combined degeneration, according to Russell, Batten, and Collier, may cause disturbance of nerve function without any signs of anæmia, or it may

¹ *Revue Neurologique*, July 30, 1901, No. 14, p. 669.

² *Brain*, vol. xxiii., No. 89, p. 39.

be associated with anæmia, or it may occur in severe anæmia without any symptoms of involvement of the nervous system. Anæmia, therefore, is not a necessary part of the disease.

The clinical picture of this subacute combined sclerosis is a very definite one. The disease is almost always fatal, and has three stages :

1. A stage of slight spastic paraplegia, with slight ataxia and marked subjective sensations in the lower limbs.

2. A stage of severe spastic paraplegia, with marked anæsthesia of legs and trunk.

3. A stage of complete flaccid paraplegia—absent knee-jerks, absolute anæsthesia, rapid wasting, and loss of faradic excitability in the muscles of the paraplegic region, increase of superficial reflex excitability, absolute incontinence of both sphincters, and œdema of the lower extremities and trunk.

The disease appears in the fourth and fifth decades, and women seem to be more commonly affected than men. The onset may be slow or rapid.

The earliest manifestations of nervous symptoms in the cases studied by Russell, Batten, and Collier were slight subjective sensations in the lower extremities, numbness, a feeling of stiffness, and sometimes tingling. Very soon slight spasticity and ataxia developed. The deep reflexes in the lower extremities were exaggerated, the extensor response in the plantar reflex was present, and there was slight loss of sense of passive position in the lower extremities. Similar symptoms appeared in the upper extremities, and usually later than in the lower. The first stage usually occupied from a half to three-quarters of the whole duration of the illness.

The transition from the first to the second stage was usually abrupt, and the most characteristic sign of the second stage was the rapid development of anæsthesia. This anæsthesia of the skin was always of peripheral distribution at first, appearing over the feet and hands ; but as it gradually extended upward it became segmental in distribution, and its upper limit upon the trunk was always a segmental one, sharply defined. A prominent feature of all the cases was a severe, constant dragging pain beneath the lower costal margin, always unilateral. The average duration of the second stage was five weeks.

The transition from the second stage—that of spastic paraplegia—to the third stage—that of flaccid paraplegia—occurred rapidly, in the course of a few days. The average duration of the third stage was about six weeks.

There was never any improvement in the nervous symptoms. Arrest sometimes occurred, but never remission. Pyrexia was present in all the cases.

In its early stages the subacute combined sclerosis may resemble disseminated sclerosis; but the advanced age of the patient at the time the disease begins, the preponderance of subjective sensations in the legs, the absence of exacerbations and remissions of the symptoms and absence of nystagmus, and the presence of irregular pyrexia should make the diagnosis of the former malady possible. No drugs have been found to influence the nervous symptoms in any way.

Various views have been held in regard to the pathology of this disease. It has been supposed to be the result of—

1. The anæmia frequently found associated with the spinal-cord symptoms.

2. Multiple hemorrhages in the spinal cord occurring in association with the anæmia.

3. Thickening of the walls of the bloodvessels, the vascular change being primary and that of the nerve elements secondary.

4. An acute myelitis occurring in the earlier stages of the disease, or a disseminated myelitis having a predilection for certain tracts of the spinal cord.

5. The affection of the white matter secondary to a primary change in the gray matter of the cord.

6. A toxic agent, which is jointly responsible for the changes in the spinal cord and for the anæmia in those cases in which this symptom is present.

Anæmia cannot be the cause of the combined degeneration of the lateral and posterior columns, according to Russell, Batten, and Collier, because in some cases it is absent; and although morbid changes have been found in the spinal cord in some cases of fatal anæmia, they were not comparable to those characteristic of the group of cases of subacute combined degeneration. The hemorrhagic theory may be dismissed because the hemorrhages have not been found, and the degeneration is unlike that produced by hemorrhages. Without giving all the reasons why these various theories, except the last, are rejected by Russell, Batten, and Collier, it may be stated that the theory that a toxic agent is jointly responsible for the changes in the spinal cord, and for the anæmia in those cases in which this symptom exists, is the most acceptable to them. The paper is a very long one, and probably for this reason reference to and discussion of similar cases in the literature are avoided. The authors give a bibliography at the end of their paper, but it would have been well had they compared these seven cases with others in the literature, in order to make our knowledge of the disease as broad as possible.

The degeneration occurring in cases of severe anæmia seems to be more disseminated and less systemic than that described as occurring

in subacute combined degeneration ; and yet it is a perfectly fair statement to make that after carefully reading the paper by Russell, Batten, and Collier we do not find very sharp definitions of these two processes. These authors evidently make a distinction between the two forms of degeneration, but the scattered areas of degeneration occurring more commonly in anæmia may cause secondary degeneration not unlike that of the combined sclerosis ; and, on the other hand, Russell, Batten, and Collier distinctly state that in their cases there were obviously two distinct processes at work in relation to the alteration found in the spinal cord, viz. : a focal destructive lesion and a systemic lesion. We want to know as fully as possible the distinctions between the subacute combined degeneration of the spinal cord and the alteration regarded as more characteristic of anæmia, for evidently there has been much confusion of these processes by many who have described cases.

Putnam and Dana showed some years ago that not only does degeneration of the spinal cord occur in cases of pernicious anæmia, but also in cases of malnutrition not classifiable under the name of pernicious anæmia.

Putnam says it is not invariably true that, in the more chronic cases in which the nervous symptoms have played a prominent part for many years, the spinal lesions are necessarily most marked. With Taylor he reports a case where a woman of feeble nutrition suffered from the characteristic paræsthesia, gradually leading to ataxia, for thirteen years, yet the spinal lesions were of relatively slight intensity ; whereas, in another case observed by Putnam, the spinal lesions were very marked, although the clinical course had been so short that it was difficult to believe it possible that the duration of the symptoms marked the duration of the disease. Putnam and Taylor¹ allude to the interesting fact that routine examinations of the spinal cord in cases of profound anæmia have shown that degenerative changes may be present, though they have not been revealed by symptoms during life, as illustrated in a case reported by Nonne, in which recovery occurred so far as clinical symptoms were concerned, although the spinal lesions were found to have persisted. Putnam believes, therefore, that the spinal lesions may be of much longer duration than the rapid development of clinical symptoms would indicate. In this diffuse form of degeneration of the spinal cord pronounced anæmia or impairment of nutrition is not always present. It is more common in females, and in Putnam's cases more than half were fifty years old or more at the time of the onset of the disease, and all but five were over thirty years old. Putnam's youngest patient was twenty-two years old, but the disease has been

¹ *Journal of Nervous and Mental Disease*, 1901, pp. 1 and 74.

seen at the age of seventeen years. Small stature or slender frame was quite common in Putnam's patients. Paræsthesia and increased frequency of micturition are early symptoms. Optic atrophy seems to be a rare sign. Syphilis is probably not a cause. This disease, according to Putnam, is almost as definite as tabes, and is of toxic origin. The name suggested by Putnam and Taylor is "diffuse degeneration of the spinal cord." The lesions found by Taylor are diffuse degeneration, for the most part limited to the cord, often in more or less discrete patches in the posterior and lateral columns, predominating in the cervical and thoracic regions. The nerve roots, gray matter, and vessels usually escape alteration. The degeneration consists of vacuolation, with slight neuroglial proliferation. Taylor believes that the process is a diffuse one, having no regard to actual neurone systems, and at most merely quasi-systemic in character. In the five cases examined by him the nerve roots were remarkably free from degeneration, although some changes were seen in one case. He states that if the extensive degenerations are due to vascular causes the appearance of the vessels gives no basis for this assumption. The larger vessels were in all cases normal, and the smaller showed only occasionally hyaline degeneration, having no apparent relation to the areas of degeneration, although such a relation was observed by Nonne and by Minnich when the hyaline change was limited to the capillaries. Taylor thinks that the peculiar and relatively constant distribution of the lesions in the cord depends upon the anatomical arrangement of the pial blood-vessels; this, however, does not imply actual disease of the vessel walls, with thrombosis, but simply that, under the influence of a cause as yet unknown, but probably toxic, those areas of the cord most deficiently supplied with blood under normal conditions are likely to suffer first under abnormal conditions.

M. Rheinboldt¹ attempts to show that the cases of diffuse sclerosis of the spinal cord occurring in pernicious or fatal anæmia and the cases of combined systemic disease of the cord with only moderate anæmia may form a large group of anæmic spinal affections of vascular, toxæmic nature. The anæmia may be merely the expression of disturbed nutrition, and the latter may be the real cause of the spinal disease. This seems to be merely another way of saying that there is some relation between anæmia and degeneration of the spinal cord, and that this degeneration of the spinal cord in association with anæmia may be diffuse or confined to definite tracts. It seems very improbable that cases of combined systemic disease without anæmia can be essentially different from those with slight anæmia; and as Rheinboldt believes

¹ Archiv f. Psychiatrie, vol. xxxv., No. 1, p. 44.

that in cases of severe anæmia the degeneration is likely to be of a diffuse character, and in cases of slight anæmia of a systemic character, we may be forced to the conclusion, if we accept his views, that there is no very great difference between diffuse and systemic disease of the cord. An opinion such as this cannot at present be unreservedly accepted. His case is an interesting example of true systemic disease of the spinal cord.

The literature on spinal-cord changes in anæmia and wasting diseases is now quite extensive, and in the report of a case by W. E. Hughes¹ and myself an addition has been made to the list. In studying the spinal cord in this case I was able to find distinct alteration of the blood-vessels, and this finding was interesting because in a number of other cases, and in specimens from several other cases examined by me, the vessels were not distinctly diseased. It seems probable that the degeneration of the spinal cord and of the bloodvessels is caused by the same poisonous substance, whatever that may be; but it necessarily follows that sclerosis of the vessels increases the degeneration of the cord, and that the latter, in turn, interferes with the circulation of blood.

Diffuse Degeneration of the Cord, with Carcinoma. It seems probable that multiple neuritis may be caused by carcinoma, although in most of the reported cases gastro-intestinal disturbances have existed, and it is uncertain to what extent these have been responsible for the nerve alterations. De Buck² has studied a case in which carcinoma of the breast gave metastasis to the liver, and the neuritis he found by microscopic examination he regarded as uncomplicated by gastro-intestinal auto-intoxication. The symptoms of compression of the spinal cord in the lumbothoracic region were present in this case; but instead of compression the diffuse degeneration, such as occurs in cases of severe anæmia, was found. This case well illustrates the difficulty of diagnosing between these two forms of spinal alteration, and a correct differential diagnosis between these conditions might be of considerable practical importance, although it is hardly likely that anyone would attempt the removal of a metastatic carcinoma of the vertebral column.

Changes in the Spinal Cord in Tuberculosis. Ransohoff³ has examined the spinal cords from persons who have died of tuberculosis. He found alteration in eight out of eleven, and in three of these the changes were pronounced. The white columns of the cord, he thinks, often undergo degeneration from tuberculosis, and this degeneration in some cases is only to be detected by the Marchi method; but in other cases accumulations of fatty, granular cells and proliferation of the

¹ Philadelphia Medical Journal, June 22, 1901, p. 1207.

² Journal de Neurologie, June 20, 1901, No. 13, p. 241.

Monatsschrift f. Psychiatrie und Neurologie, February, 1902, No. 2, p. 93.

neuroglia may be found. These changes are more common in cases of tuberculosis of rapid course. The alteration in the posterior columns is most intense in the cervical region; in the pyramidal columns it is most intense in the upper lumbar region. The extramedullary portions of the spinal roots are never implicated. These results are contradictory to those obtained by some other investigators, and possibly the explanation for this is to be found in the material studied by Ransohoff. His cases were among the insane, and he himself refers to the fact that anomalies of formation are very common in the spinal cord of the insane. Further investigations must determine whether the central nervous system of an insane person is more likely to be affected by the poison of tuberculosis than is that of a person without mental symptoms. Ransohoff's investigations are important, because they show that possibly we may be able to detect an organic cause for some of the nervous symptoms seen in cases of pulmonary or other forms of tuberculosis.

Senile Changes in the Spinal Cord. Persons in advanced life sometimes present symptoms indicative of disease of the spinal cord, and yet comparatively little attention has been given to this subject. Sander¹ speaks of the ataxic or spastic gait, of the diminution in sensation, of the disturbances of the reflexes, and of the bladder and rectum seen in the aged. A form of senile tabes as well as senile paraplegia is recognized, and to some paralysis agitans is only a premature senility. The appearance of the spinal symptoms of senility toward the end of life, the failure in treatment, the frequently coexisting dementia, and the general marasmus seem to Sander to explain the want of interest in this important subject, which, however, has not been entirely ignored either clinically or pathologically. Sander has examined about thirty spinal cords from cases of senility, the ages of the patients ranging from fifty-one to eighty-seven years. Fifty-one is early for senile changes, but the alterations resulting from arterio-sclerosis and occurring at this age from various causes Sander places with those of senility. A spinal cord from an aged person may appear macroscopically to be normal, but microscopic examination may reveal great alteration. Nerve fibres disappear, especially in the peripheral parts of the cord, and the neuroglia proliferates, not infrequently about the bloodvessels, and there is often a distinct connection of these sclerotic areas with the vessels. The latter are thickened and the nerve cells degenerated. In some cases the process appears to be more acute than in others. The changes in the spinal cord in senility are not unlike those occurring in pernicious anæmia or syphilis, but thickening of the meninges or pronounced

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 5 and 6, p. 369.

round-cell infiltration of the vessels or meninges is rather in favor of syphilis. Paralysis agitans, according to Sander, is a premature senility, and the symptoms are dependent on the location of the senile sclerosis.

Tumor of the Spinal Cord. A carefully studied case of tumor within the vertebral column is of great importance, because it affords information that may be of use in operations on the spinal column. A. Boettiger¹ has been able to diagnose a spinal tumor, and by its removal to cause much improvement in the patient's condition. The symptoms had existed about three years, and began with gradually increasing weakness and paræsthesia in the right lower limb. A sensation of tension and burning was felt in the right lower part of the trunk and left lower limb, and temperature and pain sensations were affected in this limb, so that the syndrome was that of Brown-Séquard. The development of the symptoms was progressive without remissions, and this was more suggestive of tumor than of multiple sclerosis, meningitis, or spinal syphilis. The lumbar region could not be affected, as atrophy, trophic lesions, or impaired reflexes were not present in the lower limbs. The disturbance of function did not extend to parts above the umbilicus. The tumor was probably not in the vertebræ, as the sensory disturbances on the right side were in a narrow band, the upper border of which was about on a line with the umbilicus, while the corresponding area on the left side was not affected. Root symptoms from vertebral tumors are usually bilateral and symmetrical. The tumor was not believed to be intramedullary, chiefly because the symptoms of a unilateral lesion had existed for about three years, because the motor signs appeared before the sensory, because spasticity was not pronounced in the paralyzed limb, and because all parts of the right limb had become weak about the same time. It is questionable whether the last three reasons are as conclusive as Boettiger believes. As the right lower limb was completely paralyzed; as the electric reactions of the limb were normal; as the right patellar reflex was at first exaggerated and later normal; as ankle clonus was present on the right side; as the right-sided abdominal muscles were paralyzed, and the electric reaction of these muscles was normal, Boettiger concluded that the tumor must compress the right side of the cord and be above the centres for the abdominal muscles—*i. e.*, above the ninth thoracic to the first lumbar segment. As the compression of the cord was not complete, the objective sensory disturbances in the left lower limb were less valuable than the motor for a diagnosis of the location of the tumor, and yet the upper level of the band of disturbed sensation on the right side of the trunk indicated that the growth might be at the ninth or tenth

¹ Archiv f. Psychiatrie, vol. xxxv., No. 1, p. 83.

thoracic segment. The growth was believed by Boettiger—chiefly because of the normal electric reaction in the abdominal muscles—to be at the eighth thoracic segment, and there it was found. The tumor—a psammoma or calcified fibroma—was removed, and the patient regained some of the function she had lost. The pain that had been felt in the lower limbs was believed to have been caused by compression of the spinal cord.

Two very interesting cases of spinal tumor with operation were reported by M. A. Starr,¹ at a meeting of the New York Neurological Society. In one case paroxysms of pain near the heart, mistaken for angina pectoris, were the first symptom, but later tenderness over the spinal column from the first to the eighth thoracic vertebra and over the corresponding intercostal nerves at the angles of the ribs, partial anæsthesia of the trunk, and total anæsthesia of the legs, paralysis of the lower limbs without atrophy, ankle clonus on each side, etc., made a diagnosis of spinal tumor probable. A fibroma was found at the operation and removed, but unfortunately the case had progressed so far that recovery was impossible. Delay in operating had occurred because the husband of the patient was known to be syphilitic and it was thought best to try antisyphilitic treatment; but gumma of the spinal cord is rare, only 26 cases in 400 cases of spinal tumor, according to Starr, being on record. The second case of spinal tumor seems to have yielded more favorable results.

In an interesting case of spinal tumor reported by M. Allen Starr² death occurred, although the tumor had been successfully removed. Possibly this is one of the cases referred to above. The operation, as is so often the case, had been delayed too long. Starr urges that an operation should be done as soon as the diagnosis of spinal tumor can be made. Meningomyelitis, of syphilitic or other nature, may cause at first unilateral symptoms; and such cases may be benefited by treatment, and may make a differential diagnosis difficult. When one can feel reasonably sure that the symptoms are those of spinal tumor, especially if he has employed mercury and iodide for several weeks without improvement, he should, I think, advise operation. I have among my specimens a tumor of the cord that has been given to me. This tumor could easily have been removed during the life of the patient, and is almost identical with that described by Starr. The diagnosis of tumor was not made, and the growth was found at the necropsy. Whenever one hears of pain commencing on one side of the trunk or in one limb, sharp in character and becoming bilateral after a time,

¹ *Journal of Nervous and Mental Disease*, March, 1901, p. 155.

² *Philadelphia Medical Journal*, February 8, 1902, p. 288.

associated with gradually developing loss of sensation and motion in and below the region of the body the seat of the pain, and with alteration of the reflexes and disturbance of urination and defecation, he had better think of the possibility of a spinal tumor being present.

The diagnosis of tumor compressing the spinal cord was made recently by H. Oppenheim¹ in a case in which the first symptom was pain in the left hypochondrium, about in the distribution of the eighth or ninth thoracic root. This pain lasted about two and a half years, and was supposed to be a symptom of rheumatism or intercostal neuralgia. The severity and increasing intensity of the intercostal pain, absence of the abdominal reflex, and atrophic paresis of the left abdominal muscles made the diagnosis of spinal tumor probable. Symptoms of compression of the cord followed, and operation was determined upon. A fibroma was found compressing the cord at the level of the sixth thoracic vertebra, and was removed. Improvement followed for a time, but infection occurred, and the patient died within a short time from purulent meningitis. This was an unfortunate ending to a brilliant clinical case, and is discouraging, because fibromata offer the best chances for surgical interference.

Myelitis from Carbon Monoxide Poisoning. Carbon monoxide seldom causes such intense poisoning as in the cases reported by Alexander Panski.² Father, mother, and child were overcome by coal-gas, and the child perished. The poisoning is caused by the affinity of this gas for the hæmoglobin of the blood, with which it forms a chemical compound, and prevents a union of the hæmoglobin with oxygen. Those organs which require the most oxygen are most affected, and, according to Panski, these are the cardiac muscle and the gray substance of the nervous tissues. An examination of the blood was not made, as the inhalation of oxygen for a short time prevents the detection of the CO in the blood. The history of the cases; the vasomotor disturbances, as the deep red color of the face; the trophic disturbances, as pemphigus and deep necrosis of tissue; the increase of temperature, and albumin in the urine were believed to establish the diagnosis of CO poisoning. Convulsions are supposed to belong to the symptom-complex, but so far as known they did not occur in Panski's cases; but they are early symptoms, and may have occurred before the cases came under observation. The husband was much more affected than the wife, and this is explained by the greater amount of CO inhaled by the former. The child was in the same bed with the mother, and yet the former was killed and the latter comparatively slightly affected.

¹ Berliner klin. Wochenschrift, January 13, 1902, No. 2, p. 21.

² Neurologisches Centralblatt, March 16, 1902, No. 6, p. 242.

The chief symptoms in the husband were spastic paralysis of the lower limbs, incontinence of urine and feces, vasomotor and trophic disturbances (pemphigus and necrosis of soft tissue), somnolence, disturbance of consciousness, slow, indistinct speech, and amnesia. These symptoms pointed to an acute process localized in the brain and spinal cord, and this process Panski pronounces, without hesitation, acute encephalomyelitis or disseminated myelitis. This diagnosis he believes is reliable only when the disease occurs in the course of or follows an infectious malady or poisoning by gas, and when multiple neuritis can be excluded. The latter may resemble very closely spinal-cord disease, especially when it is confined to the lower limbs. In multiple neuritis the paralysis is flaccid, bladder and rectal symptoms usually are absent, and the nerves and muscles are tender to pressure. Acute encephalomyelitis has more resemblance to syphilis of the brain and spinal cord, but Panski believed that syphilis could probably be excluded. The cause of the disease and the favorable termination were believed to favor the diagnosis of encephalomyelitis, as, according to Bruns, the appearance of the symptoms immediately after an infection or intoxication and rapid recovery speak for encephalomyelitis. According to Leyden and Goldscheider, and Bruns, acute disseminated encephalomyelitis causes either acute ataxia or paraplegia of the lower limbs. With the ataxia are found slow, scanning speech, mental disturbance, preserved or slightly diminished muscular power, and normal sensation. With the paraplegia of the lower limbs are found paralysis of the bladder and rectum, sensory symptoms, bed-sores, and bulbar and mental symptoms. Panski has been unable to find any case of encephalomyelitis following CO poisoning in the literature; indeed, little has been written concerning nervous symptoms from CO poisoning.

Myelitis and Lesions of the Conus Terminalis. The differential diagnosis between lesions of the conus terminalis and of the cauda equina is not always easy. In a case studied by L. R. Müller¹ the conus could have been the seat of a so-called compression myelitis, or the cauda equina could have been compressed at the level of the fifth lumbar vertebra. Either diagnosis would have explained the paralysis of the bladder and rectum, of the legs below the knees, and of the gluteal muscles, and the sensory disturbances of the lower limbs. The loss of the patellar reflex, although the function of the quadriceps muscle and the sensation of the anterior part of the thigh on each side were unaltered, indicated that the interruption of the reflex for the knee-jerk must have occurred within the cord. This opinion was strengthened by the presence of fibrillary twitchings, as these involuntary move-

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xix., Nos. 5 and 6, p. 303.

ments are more commonly the result of spinal lesions. The absence of symptoms of irritation of the sensory fibres—viz., spontaneous pain or pain on pressure and the presence of dissociation of sensation—suggested cord lesion rather than posterior root involvement. A diagnosis of a conus affection rather than of cauda equina injury could be made in this case, and the necropsy showed that this diagnosis was correct.

We have accepted almost without question the teaching that the centres for the rectum and bladder and for erection and ejaculation are situated in the conus. These views Müller¹ combats, and he attempts to show that disturbances in urination and defecation from disease of the sacral region are not different from those caused by transverse lesions in other portions of the spinal cord, and that erection may occur notwithstanding the existence of serious alteration of the conus and epiconus (fifth lumbar, first and second sacral segments). Centres controlling the emptying of the bladder and rectum and erection must, therefore, be situated outside the spinal cord and within the sympathetic system, while in the conus are the ganglion cells innervating the external sphincters of the bladder and rectum. Erection and discharge of semen may occur when the conus is destroyed; only the power of expulsion is diminished, and the semen flows drop by drop. All these functions have a physiological relation with the brain, and it is probable that the nerve fibres from the brain which influence the centre for erection in the sympathetic system leave the spinal cord in the upper part of the lumbar region. This explains why priapism sometimes occurs after lesions of the upper thoracic and cervical regions, but not after those of the lumbar and sacral regions. These views of Müller are based on clinical and experimental observations. The vesical and rectal disturbances caused by spinal-cord lesions consist in loss of voluntary control; at first retention occurs, but later urine and feces are discharged involuntarily but periodically, and there is not constant dribbling.

Operation after Fracture of the Spine. Walton² reopens the important question concerning the advisability of operation in cases of fracture of the vertebral column. He mentions that experience has shown that spinal operation is comparatively free from the drawbacks and dangers attending intracranial surgery; and that this fact, together with the serious, painful, and usually fatal nature of the lesion under consideration, renders the question pertinent whether it is not wise to make early operation the common custom, in the hope not only of

¹ *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xxi., Nos. 1 and 2, p. 86.

² *Journal of Nervous and Mental Disease*, January, 1902.

relieving pain and of improving the course of the average case, but even of saving an occasional patient from helpless invalidism, if not from death. The second question he presents is whether we really have reliable symptoms establishing (except through their persistence) irremediable crush of the cord; for if we have not we may not be wise in relying on the dictum that the damage was done at the moment of impact, that the pressure of fragments has been spontaneously relieved, and that nothing can be accomplished by operation. This whole subject is an exceedingly important one, and its presentation has drawn forth the opinion of eminent neurologists and surgeons. Walton refers to the fact that sufficient cases have been published, both operative and non-operative, with more or less complete restoration of function after initial symptoms accepted by some as indicating complete transverse lesion of the cord, to establish the fact that such cases are sometimes capable of considerable improvement. Walton believes that we have no symptoms from which we can assert at the outset that the cord is crushed beyond the possibility of a certain degree of repair, and that early operation in all doubtful cases will not only accomplish all that late operation will do for these cases, but it will be performed to better advantage before reparative processes with adhesion and callus have appeared. Total relaxed paralysis, anæsthesia of abrupt demarcation, total loss of reflexes, retention, priapism, and tympanites, if persistent, Walton believes point to complete and incurable transverse lesion; but the onset of such symptoms does not preclude a certain degree, at least, of restoration of function. The prognosis without operation is grave, but this is hardly a sufficient argument, as it is also grave with operation. While the results of operation are not brilliant, he thinks they are sufficiently encouraging to warrant us in making the practice more general, and in most cases it will be wise to operate within a few days of the injury; but a delay of some hours is advisable, partly on account of shock and partly to eliminate the diagnosis of simple distortion. In this recommendation of very early operation Walton goes further than many are willing to follow. We have no infallible guide as to the extent of the lesion. The operation, at the worst, does not materially endanger life or affect unfavorably the course of the case, and may, at least, reveal the lesion and lessen the pain; it may sometimes save a patient from death or from helpless invalidism of the most distressing character. These are the inducements for operation urged by Walton, but are we quite certain that operation may not affect unfavorably the course of the case? Instead of selecting the occasional case for operation we should, he thinks, rather select the occasional case in which it is contraindicated (the patient with great displacement of the vertebræ, the patient with high and rising tem-

perature, the patient plainly moribund, the patient still under profound shock). The dura should be opened freely ; it need not be sutured ; drainage is not necessary.

C. L. Dana,¹ in discussing this paper, remarked that in his experience, operation is practically safe, and that the spinal column is not injured by the operation. He had not had any fatal results in his operative cases, about half a dozen in all, and two of them were cases of injury to the cervical region. The ultimate results of these operations had not been satisfactory. He had seen some improvement in motion and in the bladder symptoms in these cases, but that had been about all, and it was quite possible that such improvement would have occurred without operation. He believes that by clinical observation one can often be sure that the cord is crushed, and that in such cases operation should not be done. If there were a line of anæsthesia coinciding with the line of paralysis, and this coexisted with the absence of the knee-jerks, he would feel almost positive that the spinal cord had been cut across, although there were certain exceptional cases affecting the cervical region which did not seem to follow this rule.

E. D. Fisher and Graeme M. Hammond² advise operation, the latter going so far as to say that he would operate in any case, no matter how hopeless it seemed, because nothing else could be done, and the patient was no worse off than before.

Joseph Fraenkel³ remarked that in four cases in which he had observed loss of the deep reflexes the necropsy had shown complete destruction in only one case. This is important, because it is believed by some that loss of the deep reflexes is indicative of complete transverse lesion of the cord, and while this is probably the rule, there are exceptions.

George E. Brewer⁴ believes that injury in cases of fracture is either a crushing one or there is hemorrhage within or without the cord ; hence the outlook for operation is not good. The cases of hæmatomyelia recover without operation, whereas cases of severe crushing injury, even with operation, do not. Possibly some of the successes were in cases of hæmatomyelia in which recovery would have taken place without operation.

Important as this discussion is, it gives little or no information regarding the class of cases which will improve without operation. I cannot help thinking that it is a mistake to say that operation does no harm, and therefore should be urged. There is danger that operation may increase the inflammatory condition, and I have two cases in mind, seen within the past few months, in which operation seemed to

¹ *Journal of Nervous and Mental Disease*, January, 1902.

² *Ibid.*

³ *Ibid.*

⁴ *Ibid.*

cause an increase of the pain. Opening the spinal canal and dura can hardly be called a trifling operation, and probably some of the cases in which operation has been employed would have done better without it. We need greatly more information on this important subject.

SENSORY AREA OF THE UMBILICUS AS SHOWN BY SPINAL FRACTURE. I believe I have shown by the study of a case¹ of fracture of the vertebræ that Head is correct in his localization of the nerve supply to the umbilicus between the ninth and tenth thoracic sensory areas. The correct determination of the situation of the umbilicus in the spinal sensory areas in relation to operations on the spinal column is very important, because the umbilicus is a part of the abdominal anatomy easily found.

This case has also shown that absence of the Babinski reflex, when symptoms of complete compression of the cord exist, may indicate that the sacral region of the spinal cord is destroyed, and that operation would be worse than useless. This may be of much importance when operation in a case of fracture of the vertebræ is under consideration.

DISEASES OF THE NERVES.

Inflammation of the Cranial Nerves. While polyneuritis is well recognized when the nerves of the extremities are affected, it may cause great difficulty in diagnosis if only the cranial nerves are diseased, as in in a case reported recently by Rudinger.² A woman, after exposure to rain while working in a field, began to suffer from paræsthesia of the right side of the face. Tenderness over the right trigeminus at the points of exit of the nerve was detected, as well as total anæsthesia in the entire distribution of the right trigeminus, paralysis with atrophy and alteration of the electric reactions of the right muscles of mastication, subluxation of the lower jaw, disturbance of taste in the anterior two-thirds of the right side of the tongue, right-sided keratitis neuroparalytica, right-sided acute purulent otitis media, and disturbance of function of the right acusticus. During the time she was in hospital complete left-sided facial paralysis developed. As all signs of meningitis or tumor were absent, the diagnosis of syphilitic neuritis was made in this case. The otitis media was believed to be a result of the trigeminus affection, and was regarded as similar in its origin to the keratitis neuroparalytica. Although the opinion has been held by C. W. Müller that middle-ear disease may be caused in this way, the evidence afforded has not been such that this opinion has been generally accepted.

¹ Philadelphia Medical Journal, February 8, 1902, p. 293.

² Jahrbücher f. Psychiatrie und Neurologie, vol. xxii.

A case of neuritis affecting the optic and cranial nerves, though not confined to these nerves, is worthy of publication. In J. R. Benson's¹ case there was no history of alcoholism, and arsenic could not be found in any of the beer or food that the patient had been in the habit of taking. Alcohol, however, was used moderately. The implication of the cranial nerves in polyneuritis has been observed a number of times, and the danger to life is great when the vagus nerve is affected. In a case of polyneuritis from alcohol recently under my care the vagus was affected to the extent that the heart-beat was very rapid, but the patient made a complete recovery.

OPTIC NEURITIS WITH SPINAL-CORD DISEASE. The occurrence of optic neuritis in association with disease of the spinal cord is difficult to understand. From the investigations of James Taylor and James Collier² it would seem that the nature of the lesions may be varied; but they are in the cervical or upper thoracic regions when optic neuritis is found in association with spinal symptoms. When the relative frequency of the occurrence of optic neuritis is considered, the records of the National Hospital of London show that even when instances of lesions of the cervical region alone are analyzed collectively, optic neuritis occurs only in a small percentage of the cases. In the larger number of recorded cases the optic neuritis has not been of severe degree, but in some cases the most intense optic neuritis, with extensive hemorrhages, has occurred; and amaurosis shortly following the occurrence of the spinal lesion, and subsequently progressing to complete and permanent blindness, has called the attention of the patient and physician early to the eyes. Taylor and Collier say that in addition to optic neuritis, headache, vomiting, or both may occur with lesions of the cervical cord, especially with spinal tumors and pressure lesions. This association has led to the diagnosis of concomitant spinal and intracranial lesions, yet subsequently the course of the disease or pathological investigation has rendered it probable or certain that such a double lesion had not existed. They are unable to give any theory as to the causal relation of optic neuritis with lesions of the upper part of the spinal cord.

PARALYSIS OF ASSOCIATED OCULAR MOVEMENTS. Paralysis manifested by loss of associated movements of the ocular muscles is not very common clinically, and certainly the cases with necropsy are exceedingly rare. The condition, however, has been observed clinically by a large number of physicians. Two cases of paralysis of associated movement of the external rectus of one eye with the

¹ British Medical Journal, April 13, 1901, p. 885.

² Brain (Winter), 1901, vol. xxiv., No. 96, p. 532.

internal rectus of the other, when an attempt was made to look either to the right or left, with necropsy, are reported by Raymond and Cestan.¹ This symptom-complex is usually the result of a lesion in the sixth nerve nucleus, as indicated by paralysis of the external rectus, with or without paralysis on the same side of the muscles innervated by the seventh nerve. In the two cases reported by Raymond and Cestan the paralysis of associated movement ("Blicklähmung" of the German authors) was not the result of a lesion of any of the nuclei of the ocular nerves. In the second case from March to July the paralysis of associated movement toward the right or left was uncomplicated, but after July internal strabismus of the right eye developed, indicating that the nucleus of the right sixth nerve had become implicated. The necropsy showed a large tubercle in the upper third of the pons, between the sixth and third nuclei, which had destroyed both posterior longitudinal bundles, believed by many to connect the sixth nucleus of one side with the third nucleus of the other. A small prolongation of this tubercle extended into the right sixth nucleus, and this explained satisfactorily the paralysis of the right external rectus, which had developed late. A tubercle was the cause of the paralysis of associated movement of the ocular muscles in the first case also. It seems, therefore, that paralysis of lateral associated movement may be the result either of a lesion in the sixth nucleus or in the fibres connecting this nucleus with the nucleus of the third nerve. I have referred to another case of paralysis of associated ocular movements in my remarks on disseminated sclerosis.

OCULOMOTOR PARALYSIS. In a case of bilateral complete oculomotor palsy described by H. Salomonson² the right upper lid could be raised voluntarily, so that the patient was able to see with the right eye. This was accomplished through the frontalis muscle. If the left eyelid were raised passively the power to elevate the right lid voluntarily was temporarily lost. The explanation offered is that the impulses intended for the levator palpebræ passed into the upper branch of the facial nerve.

ELECTRIC REACTIONS IN OCULOMOTOR PALSY. The ocular muscles are inserted so far back into the eyeball that it is impossible to reach the muscular substance with an electrode and to cause contraction of these muscles. The current applied near the eyeball cannot be strong on account of the proximity of the retina and brain. No one, therefore, according to Bregman,³ has succeeded in producing contractions in the ocular muscles by the application of the electric current.

¹ *Revue Neurologique*, 1901, No. 2, p. 70.

² *Berliner klin. Wochenschrift*, July 1, 1901, No. 26, p. 693.

³ *Neurologisches Centralblatt*, 1900, p. 690.

Duchenne, Erb, and others have failed, although Duchenne succeeded in obtaining by the faradic current a maximal contraction of the iris in a person who had just died. The pain produced by such a current would prevent its employment on the living subject. Wertheim Salomonson has made the interesting observation that when the oculomotor nerve is paralyzed peripherally the excitability of the levator palpebræ superioris is so increased that when a feeble galvanic current is applied beneath the highest point in the middle of the rim of the orbit the muscle will contract, but tardily, as paralyzed muscles elsewhere not infrequently do. When this reaction is not obtained the paralysis is to be regarded as mild; when it is obtained the paralysis is severe or moderately severe, and the rapid disappearance of the tardy reaction to a feeble current is to be regarded as indicative of improvement; the latter, however, according to Bregman, may be indicative of progressive degeneration. Wertheim Salomonson published his observations on six cases in Dutch, and two years have elapsed since then, and as no confirmation of these statements has been given by others, the confirmation by Bregman is of importance. The determination of the reaction of degeneration in any one of the muscles supplied by the oculomotor nerve is of prognostic value in regard to the durability of the paralysis. It will not help us to determine whether the nerve or its nucleus is affected, but it will help us in forming some idea of the durability of an ocular palsy.

An observation made by Uhthoff and confirmed by Bregman is interesting. When an oculomotor paralysis is lessening in severity, Argyll-Robertson's phenomenon may develop, and the sphincter iridis may recover power sooner than the ciliary muscle.

RECURRENT OCULOMOTOR PALSY. A case of the rare disease recurrent oculomotor paralysis is reported by Möbius.¹ This disease always begins in childhood or youth, or at least before the twenty-fifth year. It is not hereditary, and the patients do not come from families in which migraine occurs. The attacks always begin with headache and vomiting or nausea—*i. e.*, they begin with migraine, which usually disappears when the paralysis develops, but may last a day or two longer. There may be also vertigo, secretion of saliva, and vasomotor disturbance. Flittering scotoma is never seen. Abortive attacks consisting only of migraine may occur, but they are always on the same side, and never vary from one side to the other, as is common in the disease migraine. The duration of the migraine and of the paralysis is very variable; the former may last hours or weeks, and the latter weeks or months. Long attacks of migraine are common,

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xvii., Nos. 3 and 4, p. 294.

whereas in the disease migraine severe attacks lasting several weeks very seldom occur. In some cases several attacks may occur in one year, and in others years may elapse between the attacks. The periodic oculomotor paralysis, according to Möbius, is as truly periodic in its manifestations as epilepsy, migraine, and circular insanity. The paralysis of the oculomotor nerve is unilateral and complete, and the nerves of both sides are never involved. Between the attacks some indication of paralysis persists, and becomes more pronounced in course of time. The first branch of the trigeminus may be affected, and this involvement is suggestive of a basal lesion. The periodic oculomotor paralysis, according to Möbius, is not a variety of migraine, and in this assertion he takes a stand very different from Charcot's; it is not ophthalmoplegic migraine. The migraine is symptomatic, and is such as occurs in epilepsy, parietic dementia, etc., and should be sharply separated from the disease migraine. Möbius acknowledges that migraine may cause oculomotor paralysis, but only after the migraine has existed for years; in periodic oculomotor palsy the palsy is usually observed in the first attack. Whether all neurologists can accept Möbius' distinctions or not remains to be seen. He believes that the cause of periodic oculomotor paralysis is a basal lesion, and he refers to the two cases in which tumor of the third nerve was found, but the periodicity is hard to explain.

The disease as described by Möbius is certainly a very extraordinary one. The age at which it commences, its association with migraine, and its unilaterality are all important, and distinguish it, according to Möbius, from all other forms of recurrent third nerve palsy.

W. M. Leszynsky¹ says he has seen five cases of recurrent oculomotor paralysis. As Leszynsky gives as cardinal symptoms the unilateral character of the headache, the limitation of the ocular paralysis to one side—the pain and paralysis being on the same side—the involvement of the same nerve in all attacks, the frequent involvement of all branches of the nerve, and the intervals of complete freedom, it is presumable that his cases were typical. It is a pity that the details are not given, as five cases of recurrent oculomotor palsy seen by one man are worthy of a full report. Leszynsky says it has been assumed that the cerebral hemisphere, on account of its increased vascularity during the attacks of migraine, which always occurs in this form of paralysis, presses a tumor on the oculomotor nerve against the unyielding base of the skull, and in this way the conductivity of the nerve is interfered with.

¹ Medical Record, May 25, 1901, p. 812.

Another case reported by Leszynsky¹ is typical, and it is well to give it a little attention here. A woman, aged twenty-nine years, began when six years old to have attacks of headache confined to the right temporal and supra-orbital regions, and invariably accompanied by vomiting. The attacks occurred every five or six weeks. At her twelfth year the headache was associated with ptosis of the right eye, from which she recovered in two weeks, the migraine continuing to occur as before. The second attack of oculomotor paralysis occurred in her nineteenth year, with the same pain and vomiting. She had partial ptosis, diplopia, and inability to look upward with the right eye. She improved in three weeks, but the eye did not move upward as well as before for a few months, and then motility was completely regained. The third attack occurred in her twenty-second year, and was characterized by almost complete ptosis, outward deviation of the eyeball, and diplopia. She recovered in about a year. She has had five attacks, the last one only a short time before the report of the case was made.

In the discussion on this case when it was reported at a meeting of the New York Neurological Society several similar cases were referred to, all of which had been seen by members of the society. In two cases of recurrent oculomotor paralysis a tumor compressing the nerve was found. The pathology of the affection is in reality unknown.

Deviation of the Tongue in Paralysis. It is well known that when the tongue is paralyzed on one side it deviates toward the paralyzed side when it is protruded, but it does not appear to be as fully known that when the tongue is atrophied on one side it deviates toward the sound side while it is in the mouth and the mouth is opened. Babinski has especially emphasized this fact, and now reference is made to it by G. Guillain.²

Facial Palsy. The pathological changes in peripheral facial palsy from rheumatism or exposure to a draught have been very imperfectly known, as until G. Alexander's³ report of a case only two cases with microscopic examination were to be found in the literature. These cases were reported by Minkowski, and Dejerine and Theohari. In these cases and in Alexander's the findings were those of degenerative neuritis, and there was evidently no compression of the nerve, so that the opinion that facial palsy is caused by inflammatory changes in the tissue about the nerve and compression thereby must be abandoned. It seems probable that the nerve when swollen may degenerate more rapidly because of the limitation of space within the bony canal. In

¹ Journal of Nervous and Mental Disease, August, 1901, p. 462.

² Revue Neurologique, July 30, 1901, No. 14, p. 699.

³ Archiv f. Psychiatrie, vol. xxxv., No. 3, p. 778.

Alexander's case degeneration of axis cylinders and medullary sheaths and round-cell infiltration were found. The cause of these changes could not be determined. Although no bacteria were detected, Alexander thinks they may have been present, and in some unknown way have found favorable opportunity for growth after the exposure to the draught. As the facial palsy had lasted twenty-six days, the bacteria may have died or have been rendered unstainable. The cause of death in this case was carcinoma of the œsophagus.

A few cases of peripheral facial palsy, with necropsy, from purulent otitis media, leukaemia, or in parietic dementia have been reported.

An interesting phenomenon is discussed by J. H. Herzfeld.¹ Some persons afflicted with paralysis of the facial nerve, and unable to close the eyelids on the paralyzed side while awake, are found when asleep with both eyes closed. This closure of the lids in sleep does not occur in every case of facial palsy, and, according to Herzfeld, is probably the result of diminished tonicity of Müller's unstriated muscle fibres in each lid, the function of which is to enlarge the palpebral fissure, and of diminished tonicity of the unstriated muscle fibres of Ténon's capsule, which are antagonistic to the recti muscles, the latter pulling the eyeball backward. These unstriated muscles are innervated by the sympathetic system.

FACIAL PALSY WITH HYSTERIA. Complete anæsthesia in the distribution of the trigeminal nerve is rare in facial palsy, and when it does occur it is probably of hysterical nature, as it was in a case observed by James Hendrie Lloyd.² The motor branch of the fifth nerve was not implicated in his case, and the anæsthesia extended beyond the distribution of the trigeminus. The patient, a woman, also had loss of taste and smell on the right side; the former the author attributes to the implication of the chorda tympani, but it may possibly have been a sign of hysteria. The right visual field was contracted to the fixation point, and the left was markedly limited.

Alcoholic Neuritis. It seems remarkable that any physician of experience should doubt the existence of neuritis from alcohol, and yet Reynolds, in his evidence before the Royal Commission appointed to investigate the recent occurrence of polyneuritis from arsenical poisoning, is stated to have said that he had never seen pure spirits produce alcoholic neuritis. L. H. Jones,³ to correct the wrong impression conveyed by these words, reports a case which he believes to be one of recurrent alcoholic peripheral neuritis. The case is quite typical, but interesting simply because of the recurrence of the neuritis.

¹ Berliner klin. Wochenschrift, 1901, No. 35, p. 904.

² Philadelphia Medical Journal, March 30, 1901, p. 628.

³ British Medical Journal, April 13, 1901, p. 883.

Jones seems to doubt whether neuritis from arsenic is so common as some suppose. For many years past he has been in the habit of treating cases of chorea in children and adolescents with large doses of arsenic, amounting in many cases to 45 minims of Fowler's solution daily, and in two instances only has he observed the approach of neuritis, indicated by numbness of the thumbs and finger-ends. In cases of pernicious anemia in which arsenic had been pushed in large doses, month after month, no sign of neuritis had appeared; and in a case of sarcoma of the face no less than 90 minims of the solution had been given daily for an indefinite period, without producing paralytic symptoms. He therefore thinks that in the outbreaks in England of supposed arsenical neuritis, alcohol was responsible for much that occurred, and that the arsenic acted on systems saturated with alcohol. This seems very probable, as the arsenic was contained in beer and taken by those who doubtless were in the habit of drinking beer freely; but it seems to me that Jones minimizes improperly the danger of arsenical neuritis. Are such large doses of Fowler's solution as he speaks of advisable?

Chorea Followed by Neuritis. Arsenical neuritis following the administration of Fowler's solution for chorea has been observed several times; but Heubner¹ reports a case of chorea followed by neuritis of the lower limbs, and, in his opinion, not due to arsenic, because not more than five drops had been given three times a day, and no other signs of arsenical poisoning were detected. The report of this case is very briefly given, but it reads as though Heubner believed that the chorea was the cause of the neuritis. Some persons are more likely to show injurious effects from the use of arsenic than others.

I have seen herpes zoster develop after Fowler's solution had been given a week or ten days in small doses, and it seems reasonable to believe that it was really the arsenic and not the chorea that caused the neuritis in Heubner's case.

Neuritis with Mental Symptoms. Westphal² has observed a case of polyneuritic psychosis from alcohol with a very peculiar condition of the tendon reflexes. The patellar reflex on each side was absent even when reinforcement was employed, but the percussion of the patellar tendon caused pronounced contraction of the abductors of the opposite side. The reflex was therefore a crossed one, but the peculiarity of it was that the contraction was strong on the opposite side and absent on the side on which the blow was given. Sternberg found

¹ Berliner klin. Wochenschrift, December 2, 1901, p. 1215.

² Deutsche med. Wochenschrift, January 30, 1902, p. 81.

this condition once in a case of tabes, but it has not been observed previously in a case of neuritis, according to Westphal.

Mercurial Neuritis. Spitzer¹ acknowledges that if we examine the literature, the possibility and even the probability of acute mercurial polyneuritis must be acknowledged, but that an absolutely demonstrable case has not been reported. A case that he observed appeared to him to be one of acute mercurial polyneuritis. A man with a syphilitic eruption had severe spontaneous pain and pain on pressure in the lower extremities, with ataxia, and these symptoms appeared while he was receiving inunctions of mercurial ointment. The tendon reflexes were exaggerated and Romberg's sign was present. The symptoms of polyneuritis promptly disappeared when the mercury was discontinued. The argument is the old one of *post hoc ergo propter hoc*, and to this, so far as polyneuritis is concerned, the objection has been made that neuritis is the result of many causes; and we cannot be sure that either syphilis or mercury ever produces general inflammation of the nerves—cannot be sure, although we may believe it is possible.

Neuritis of Pregnancy. The polyneuritis of pregnancy is fortunately not very common; the disease occurs more frequently after labor, and is probably in most cases the result of infection or of direct injury to the nerves by pressure. A case observed by James Stewart² is interesting in several particulars. The patient first came under observation on August 23, 1900, complaining of tremor and numbness below the knees and elbows, and she was uncertain as to the time when she first experienced the paræsthesia in her limbs, but was almost certain it was present about two months before labor, which had occurred on the first of July. On the 23d of August she had a fine tremor of both hands, which eventually disappeared. No distinct paralysis was present at this time, but the movements were slow. On the 11th of September she had considerable loss of power in the muscles of the lower limbs, most evident in the more peripherally situated muscles. She was able to walk, but with considerable difficulty. A similar but less marked paralysis was present in both upper limbs, and was also most evident in the distal parts. She still had a constant and unpleasant sensation of numbness in the limbs, and sensation to touch was slightly diminished over both lower limbs and on the trunk to nearly the umbilicus. The reaction to painful and thermic stimuli was unimpaired. The calf muscles were very tender on pressure, while the remaining muscles were only slightly tender. The kneejerks were normal. After the 11th of September the muscular weak-

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xix., Nos. 2-4, p. 215.

² Philadelphia Medical Journal, May 4, 1901, p. 857.

ness gradually increased until the paralysis of the lower limbs became complete, and of the upper limbs complete in the distal parts. The knee-jerks disappeared. The large nerve trunks and muscles of both the upper and lower extremities became very tender on pressure, and atrophy of the muscles of the lower limbs was detected. The diaphragm became affected, and death occurred from pneumonia on the 21st of October. Clinically, this was certainly a case of polyneuritis, and the pathological findings confirmed the clinical diagnosis. The statement that poliomyelitis was present is somewhat misleading. Distinct signs of inflammation do not seem to have been present in the spinal cord; there is no mention of cellular infiltration, of distended bloodvessels, or of hemorrhage in the gray or white matter of the cord. The changes of the cell-bodies of the anterior horns were intense, but such changes may be secondary to alteration of the motor nerves, or may occur simultaneously with such alteration, and have been described as reaction at distance, and the normal condition of the anterior roots does not render this view untenable. Degeneration of the posterior columns has been found frequently in cases of polyneuritis, and in regard to chromolytic changes in Clarke's column much caution is needed. It appears to me very doubtful whether the alteration of the spinal cord, as described in this paper, was in any way the cause of the symptoms. The case is interesting as one of polyneuritis occurring during pregnancy, in which all the common causes of neuritis, such as lead, alcohol, acute and chronic infectious diseases, or septicæmia, were absent. Stewart refers to several cases of puerperal neuritis in which vomiting had been very severe, as it had been in his own case. Clifford Allbutt looks upon the vomiting of pregnancy as due to a toxin, and thinks the same toxin may produce a neuritis, which, of course, is possible, but not proven. Several references to puerperal polyneuritis are given by Stewart.

Syphilitic Sciatica. The existence of syphilitic sciatica has always been a matter of doubt, but F. Mendel¹ has reported three cases as examples of this disease. Injection of salicylate of mercury in the region of the great sacro-sciatic foramen caused much improvement. F. Mendel believes that syphilis is not an uncommon cause of sciatica, and that iodide of potassium or mercurial inunctions are much less effective than injections of salicylate of mercury.

Lead Neuritis. It is well known that when lead causes paralysis it is usually in the muscles supplied by the posterior interosseous nerve, and that the supinator longus muscle usually escapes. This muscle is sometimes involved in the lead palsy, as I have seen in two

¹ Münchener med. Wochenschrift, July 2, 1902, p. 1091.

very positive cases. The muscles innervated by the ulnar and median nerves may also be affected. In rarer cases the muscles of the lower limbs are paralyzed, but G. Köster¹ and E. Remak doubt whether the fifteen cases of lead palsy of the lower limbs reported by Tanquerel were correctly diagnosed. When the palsy does occur in the lower limbs it is usually in the distribution of the external popliteal nerve, and the anterior tibial muscle, like the long supinator of the upper limb, usually escapes; but at least two cases of lead palsy are reported in which this muscle was implicated. G. Köster believes he has observed a form of lead palsy not hitherto reported, viz.: paralysis and atrophy of the interosseous and lumbrical muscles of both feet, especially of the right foot. He has taken into consideration in making a diagnosis the neurotic (neural) form of muscular atrophy and chronic anterior poliomyelitis. He acknowledges that exceptionally the neurotic muscular atrophy might develop in a man between thirty and forty years of age—the age of his patient—although it usually begins about the period of puberty, but in his case the patellar reflex was preserved, and it usually is lost in the neurotic atrophy, the nerve trunks were not sensitive to pressure, and the pain experienced was the result of mechanical causes. His patient had been a compositor for twenty-seven years. He had had arthralgias and typical lead colic, and there could be little doubt that he was suffering from lead poisoning. The symmetry of the paralysis and the absence of sensory symptoms are characteristic of lead palsy. The localization of the paralysis does not exclude lead as the cause, inasmuch as cases are on record in which unusual regions were first affected by lead—*e. g.*, the small muscles of the hand or the shoulder muscles. It seems probable, therefore, that Köster is correct in attributing the paralysis and atrophy of the interosseous muscles of the feet in his case to lead poisoning, even though the location is so unusual. Whether lead affects first the motor nerves and secondly the cells of the spinal cord is uncertain, but it is very remarkable that it should show such a selective action for the motor system without implicating the sensory.

Implication of the Bladder and Rectum in Neuritis. The case of neuritis reported by Burr and McCarthy² is interesting on account of the occurrence of palsy of the bladder and rectum, peculiar changes in the Gasserian ganglion, and degeneration of the nerves supplying the pelvic viscera. Some years ago the implication of bladder and rectum was almost sufficient to prevent a diagnosis of neuritis in a case, but now we know that such implication may occur when the peripheral nerves are diseased. Probably every neurologist of experience has seen

¹ Münchener med. Wochenschrift, 1902, No. 15, p. 601, and 1902, No. 16, p. 661.

² Philadelphia Medical Journal, November 2, 1901.

vesical and rectal disturbance in neuritis. Burr and McCarthy speak of alteration of the Gasserian ganglion in their case, resembling that of rabies. I believe that I was among the first to describe such changes in the Gasserian ganglion and posterior root ganglia in cases not of rabies, and similar changes have been described by others. I do not undervalue the importance of the microscopic examination in a suspected case of rabies, but I have thought, and still think, that the changes in themselves cannot be considered as pathognomonic of rabies, and I mean by this that similar alterations may be produced by other causes. I was led first to this conviction by the improbability of the lesions being produced by one agent only. Many cases of rabies have been examined both at home and abroad, and the value of a microscopic study of the nervous tissue has been established, but perhaps not quite to the extent that some would desire.

Pressure Palsy. The most common form of pressure palsy is wrist-drop, and is produced by the pressure of the head of the patient upon the musculospiral nerve, usually in a drunken sleep. The supinator longus may escape, although at times it is implicated, this depending on the point of pressure. R. Suchier¹ has observed an unusual form of musculospiral palsy. The cause was the common one, viz. : pressure of the head upon the arm during sleep. After awakening the patient found his forearm and hand numb and tingling. The fifth finger could not be extended at all, the fourth could be slightly extended, the middle finger somewhat better, while the index finger and thumb could be fully extended. Flexion of the finger and pronation, extension, and flexion of the hand were possible. The sensory disturbance gradually disappeared, but three years after the paralysis had developed very little return of motion had occurred. The faradic and galvanic electrical reactions were diminished, but not lost, and distinct reaction of degeneration was not obtained. The partial palsy in the distribution of the musculospiral nerve and the long duration of this pressure palsy without reaction of degeneration make this case remarkable. Notwithstanding the relatively favorable condition of the electric reaction, scarcely any improvement in motion had occurred within three years. Atrophy was very slight, and could be explained as the result of inactivity. The restoration of sensation without restoration of motion is peculiar, but well known. We explain this by saying that the sensory fibres are more resistant, which, after all, is not much of an explanation. Suchier says he has seen sensation return within two or three days after complete division of the ulnar nerve, when the two ends were sutured ; but he, as well as all who have had a similar experi-

¹ Deutsche med. Wochenschrift, January 30, 1902, p. 81.

ence, cannot give a satisfactory explanation for this extraordinary phenomenon.

Neuritis with Lesions of Bone. The case of median nerve palsy reported by Haldor Sneve¹ is interesting chiefly from the trophic implication of the bones in the distribution of the affected nerve. The paralysis was the result of a cut with a scythe on the inner aspect of the right elbow. The circumference of the injured forearm and of the hand was 1 cm. less than that of the corresponding parts of the opposite side. The index and middle fingers were deformed at the tips and shorter than those of the other hand. Röntgen ray photographs were made. The distal phalanges of the index and middle fingers were missing, and there was some thickening and callous formation on the ends of the middle phalanges of these fingers. This case is comparable with those of muscular dystrophy and hemiplegia developing in the adult in which atrophy of bone has been detected. There is, of course, no reason why the bony tissues should escape when the soft parts atrophy, and careful study would doubtless show that the bones are wasted frequently. Alteration of hard tissue doubtless is not so rapid as alteration of soft tissue, but where months have elapsed since muscular atrophy has begun the bones of the part are probably also affected. The arrest of the growth of bone is very evident in infantile hemiplegia, poliomyelitis, or some other diseases when the lesion develops in early childhood, and the same causes which stop the growth of a tissue probably may cause alteration of this tissue when the lesion develops later in life. It is exceedingly interesting and important that so intense an alteration of the bones as that described by Sneve should have occurred after neuritis.

Interstitial Hypertrophic Progressive Neuritis of Childhood. The extraordinary and rare disease, called by Dejerine interstitial, hypertrophic, and progressive neuritis of childhood, was described by Dejerine² and Sottas from a study of two cases occurring in a brother and sister. A necropsy was obtained some years ago on the body of the sister, and recently the body of the brother has come to the autopsy table. This man I have had the opportunity of studying while he was living, and can bear testimony to the peculiarity of the clinical picture of this disease. After a hasty glance at the patient one might have made the diagnosis of tabes dorsalis, but such a diagnosis would have been incorrect. The disease began at the age of fourteen years with muscular atrophy and disturbances of objective sensation in the lower limbs. The atrophy affected the distal portions of the limbs, causing

¹ St. Paul Medical Journal, March, 1902.

² *Revue Neurologique*, June 15, 1901, No. 11, p. 557.

deformities of the feet and the Aran-Duchenne hand. Fibrillary contractions, kyphoscoliosis, ataxia, "giving way of the legs," Romberg's sign, nystagmus, myosis, Argyll-Robertson's sign, lost knee-jerks, were features of the disease. The sphincters were never affected. The most striking sign was great hypertrophy of all the nerves accessible to palpation. A microscopic study of the specimens obtained in this case has not yet been made, but macroscopically the lesions were like those observed in the material obtained from the sister, viz. : thickening of the nerves and atrophy of the posterior columns of the cord.

Herpes Zoster. Comparatively little work has been done on the pathology of zoster, so that twenty-one necropsies reported by Henry Head and A. W. Campbell¹ add much to our knowledge. This paper represents the most thorough work that has ever been done on this subject. A typical attack of zoster, they say, must be considered an acute specific disease of the nervous system, having a prodromal period of varying length, during which the patient feels ill, followed by the appearance of the eruption. The febrile period lasts from three to five days, and the rash may appear a few hours after the onset of the disease, or may tarry until the fall of temperature. Second attacks are not common in zoster, and the disease seems to occur in epidemics, both of which facts indicate that zoster is an acute specific disease. The analogy with acute anterior poliomyelitis, referred to by Head and Campbell, is very interesting. Poliomyelitis also begins with malaise and fever, and has a similar pathology, as in both the condition is one of acute inflammation, in the one case the spinal cord being affected and in the other the spinal ganglion. Head and Campbell suggest that zoster might justly be spoken of as acute posterior poliomyelitis; but such a designation would cause confusion, as it would convey to many the idea of a lesion in the posterior horns of the spinal cord. I have examined a case of acute poliomyelitis in the early stages, and it is interesting to know that in the same case the lumbar posterior ganglia were in a condition of inflammation as great as that in the spinal cord; but zoster had not developed, possibly because death occurred too soon. I am not aware that the posterior ganglia have been examined in any other case of acute poliomyelitis. Head and Campbell in cases of zoster have found inflammation of varying degree in the affected ganglia, from scattered collections of small round cells to large hemorrhages in the centre of inflammatory foci, with destruction of nerve cell bodies. They can tell us nothing of the agent responsible for the alteration of the ganglia. They found no signs of bacterial infection, but then they made no cultures. The

¹ Brain, 1900, vol. xxiii., No. 91, p. 353.

agent, whatever it may be, seems to have a specific attraction for the posterior root ganglion, exactly as the equally unknown cause of acute anterior poliomyelitis attacks the anterior horns. We seem to be forced to the conclusion that both diseases are due to bacteria, but how extraordinary that in zoster the unknown agent should usually attack only one or only a few ganglia. The investigations of Head and Campbell give us good reason to believe that zoster is the result of inflammation of, or of injury to, the peripheral ganglia.

Division of Posterior Roots in Neuritis. A case that shows the areas of anæsthesia following division of the fifth, sixth, and seventh cervical spinal roots; the relief of pain as a result of the operation; the development of Brown-Séquard's paralysis following laminectomy, and partial return of sensation in previously absolutely anæsthetic areas, is certainly extraordinary, and yet just such a case has been observed by Morton Prince.¹ The patient, a man, was struck by a railroad train, and as a consequence had complete and absolute paralysis of nearly the whole left arm, evidently from neuritis of the brachial plexus. The absolute paralysis involved all the muscles of the shoulder, upper arm, and forearm, but the intrinsic muscles of the hand and the pronators of the forearm were only partially paralyzed. The most diseased nerve fibres were from the fifth, sixth, and seventh cervical segments, while those coming from the eighth cervical and first thoracic, supplying the intrinsic hand muscles and the long flexors and extensors of the fingers, were only partially implicated. From the time the splint was taken off intense pain was felt, chiefly in the thumb and forefinger, and whatever strength had been regained in the hand a year or more after the accident could not be utilized because of this intense pain. A rough touch to these digits caused the most excruciating agony. The location of this pain did not correspond in distribution to the area of any nerve supply, but did correspond to the usually accepted distribution of the sixth cervical root or segment. Prince, therefore, advised division of the posterior roots of the fifth, sixth, and seventh cervical nerves, the fifth and seventh being included in case some of these fibres overlapped in the affected area, and therefore might be the source of the trouble. Laminectomy was done by J. C. Monro, and the operation was very severe and bloody, as the patient was fleshy and had a "bull neck." From the moment of coming out of the ether the patient was completely free from pain in all of the previously affected areas, and the wound healed perfectly, and the operation so far was successful.

After the patient began to get about it was noticed that he limped

¹ Brain (Spring), 1901, vol. xxiv. p. 116.

and was weak in the left leg, and examination showed the presence of a moderate Brown-Séquard paralysis. During the operation the danger of a hemorrhagic clot forming within the spinal canal was thought of, although this has never been known to occur. The Brown-Séquard paralysis could have been the result of such a hemorrhage, or of pressure from granulation tissue or some form of callus, but at all events it was in some way the sequence of the laminectomy. It was noteworthy that the pressure on the cord was on the side on which the roots were cut.

Gradually severe pain developed on each side of the neck behind, so that turning the head to either side was very painful. The cause of this pain was believed to be a neuritis due to some nerve being injured either by the operation or by the healing of the wound. About five months after the operation the patient was completely free from pain in the hand and arm and also in the neck. He could turn his head freely without discomfort, but the arm remained completely paralyzed from the shoulder down. The Brown-Séquard paralysis had largely disappeared. The case shows how severe the complications following laminectomy may be, although it is hardly probable that the same complications would occur in another case.

The distribution of anæsthesia following the division of the spinal roots differed materially from that indicated in the diagrams of Starr, Kocher, and Wichmann. The absolute loss of sensation for touch and pain was limited to the whole thumb, with its ball, back of the hand, and a strip along the radial aspect of the forearm and arm. Prince believes that the absolutely anæsthetic strip along the radial edge of the forearm corresponded with that ascribed by both Starr and Kocher to the fifth root, and must have been due in part or wholly to the division of this root. The sixth root in the hand could not have supplied more than the thumb (front and back), with its ball, though it may have given sensory fibres to the back of the forefinger. The seventh cervical probably gave a more extensive supply to the back of the hand than usual, but not to the fingers. The remainder of the backs of all four fingers and nearly the whole of the palm and palmar surfaces of the fingers must have received a supply from the eighth cervical or first thoracic root, or both.

The return of sensibility in previously anæsthetic areas was remarkable. About five months after the operation the anæsthetic area was much diminished. As the roots were cut, Prince does not believe that there was a restoration of function in these fibres, and attributes the improvement in sensation to overlapping nerve-supply from adjoining root areas, which had become functionally more excitable.

This case is so unusual and so instructive that it deserves all the

space I have given to it, and even more. The diagrams accompanying the paper are desirable for a correct understanding of the report, but the journal in which the article is published is accessible to most physicians.

The subject of division of posterior roots for the relief of pain is one of great interest to the surgeon as well as to the neurologist, and the operation is one seldom attempted, and yet founded on thoroughly rational principles.

Regeneration of Nerves. Charles Ballance and Purves Stewart,¹ after a very careful investigation on the subject of regeneration of nerves, state in their conclusions that previous workers on this subject may be classified into two schools—the “central” and “peripheral,” respectively. The overwhelming majority of writers belong to the “central” school, according to which it is maintained that the new axis cylinders which appear in the regenerated distal segment are direct outgrowths from those in the central segment, the young axis cylinders growing downward into the empty neurilemma sheaths of the distal segment and replacing the old axis cylinders, which have previously become degenerated and been absorbed. According to this doctrine, the distal segment of a divided nerve plays a passive rôle, and no regeneration can take place in the distal segment unless it has been united to the proximal.

The peripheral theory is that according to which the new fibres in the distal segment—axis cylinders, medullary sheaths, and neurilemmata—are formed from pre-existing cells in the distal segment itself. The young axis cylinders and medullary sheaths are laid down, in the first instance, in the distal segment, and they become attached later to those of the central segment, thereby restoring the conductivity of the nerve trunk. This is the view accepted by Ballance and Stewart. They say that even in the distal segment of a non-united nerve regeneration of axis cylinders and of medullary sheaths takes place, although full maturity of the new nerve fibres is not attained unless the distal segment be joined to the proximal, so that their fibres may become functionally continuous. The neurilemma cells take on an active neuroblastic function and give rise to new axis cylinders.

I cannot further enter into details, as my review is chiefly of clinical neurology, and I must refer all those interested in the important subject of nerve degeneration and regeneration to this excellent monograph by Ballance and Stewart. If the opinions of these authors are correct they will have much importance in questions relating to the surgery of the nervous system, and they are in confirmation of those held by

¹ *The Healing of Nerves*, Macmillan & Co., 1901.

Bethe.¹ The latter resected the sciatic nerve of the dog, and sewed the peripheral stump within a muscle to prevent union of the two ends. The peripheral end of the nerve degenerated below the point of division of the nerve, but later full regeneration of this peripheral portion occurred from the nuclei of the sheaths of Schwann. The nerve terminated at its proximal end blindly. Irritation of the newly formed nerve caused contraction of the muscles supplied by it, and the regenerated nerve differed in no way from a normal one, and yet it was not in continuity with nerve cell bodies. If this regenerated nerve were cut its peripheral portion below the line of division degenerated, but the more central portion persisted, even though it were not in connection with nerve cell bodies.

The views of Bethe, Ballance and Stewart give an explanation for what has always been a mystery, viz.: the readiness with which peripheral nerves regenerate and the absence of regeneration in the central nervous system. The nerve fibres of the brain and spinal cord do not possess sheaths of Schwann, and in the light of these recent investigations we could hardly expect regeneration where the nuclei of the neurilemmata are absent.

The division of the sensory root of the trigeminus for the relief of tic douloureux, which has been described by C. H. Frazier and myself,² will probably be successful, especially if the root is divided at or close to its entrance with the pons, where the sheaths of Schwann cease.

FUNCTIONAL DISEASES.

Trophoneurosis. B. Sachs and A. Wiener³ have reported some cases of trophoneurosis of the extremities in which they found disease of the peripheral bloodvessels and peripheral nerves. Sachs, in the past, has attributed the manifestations of such forms of trophoneurosis more to vascular changes, but in this paper with Wiener he seems to pay some attention also to the nerve alterations. I do not believe that these pathological lesions can be sharply separated from one another. One sooner or later causes the other, and it is impossible to say which develops first or to determine accurately to what extent the symptoms are due to the vascular disease or to the nerve lesion. Pain certainly seems to indicate some disturbance of nerve fibres, which at first may be so slight as to escape detection with the microscope, but

¹ Centralblatt f. Nervenheilkunde und Psychiatrie, July, 1901, p. 440.

² Philadelphia Medical Journal, 1901, vol. ii., and University of Pennsylvania Medical Bulletin, December, 1901.

³ Philadelphia Medical Journal, June 29, 1901 p. 1242.

which may soon become very evident to the eye if the pain has persisted. We can hardly imagine that pain may be the result of vascular disease alone. An alteration of nerve fibres, which under the microscope appears slight, may have caused very marked sensory or motor disturbances; and as proof of this I have in mind a piece of the musculospiral nerve excised by Dr. W. W. Keen in a case of wrist-drop, and examined by me. There seemed to be an abundance of normal nerve fibres present for the discharge of the functions of the nerve, and yet the palsy had been very marked. Paræsthesia in the extremities is not infrequently found in cases in which arteritis is present; but I fully believe that a careful examination in such cases, if it were possible, would show that the nerves are not normal, at least in their terminal portions.

Epilepsy. There are some statements made by J. J. Putnam,¹ in an interesting paper on epilepsy, that are well known, but often forgotten. He refers to the fact that in Jacksonian epilepsy a limitation of the lesion or disease-process to the cortical area corresponding to the "signal symptom" is not permissible, and that sharply localized epileptiform outbreaks occur with tumors of considerable size, and even in so-called idiopathic epilepsy. This occurrence, he thinks, indicates no more than that a certain cell-area is abnormally unstable, whether on account of disease or from an inherent excitability due to the nature of its functions. Putnam thinks that operations for the relief of focal epilepsy, whether these aim at the removal of local sources of irritation or of diseased areas involving the cortex, or of the removal of the apparently normal cortex, are unquestionably often of great benefit, although they have not accomplished all that was hoped of them. His explanations of the manner in which good results in epilepsy are achieved are exceedingly interesting. He employs the theory of inhibition—a theory he has used for other conditions. He believes that the arrest of epilepsy through surgical operation is an affair primarily of inhibition, and next of the establishment of a new habit, made possible by this temporary arrest of the morbid outbreaks. He does not believe that it is necessary to look for a focal lesion to account for focal symptoms any more than it is necessary to look for a focal lesion to account for the numbness of the hand or the hemianopsia which usher in an attack of migraine. He does not express himself in very positive terms concerning the comparative merit of cortical excision as against operations of less magnitude, such as simple exposure of the cortex or loosening of dural adhesions and the like, but he rather favors simple exposure of the cerebral cortex, without excision of a part of the

¹ Philadelphia Medical Journal, June 15 and 22, 1901.

cortex, as a surgical procedure. The advantage of this operation is that it can be repeated if necessary, and does not shut out the possibility of doing excision of the cortex later. He urges that whatever operation is done it should be considered that the arrest of the symptoms is chiefly useful as affording a better opportunity for bromide medication, which is best employed according to Charcot's method, in which the dose is increased for three weeks, then dropped to the starting point, and then increased again, and so on. The bromide treatment should be reinforced by every hygienic influence that can be devised.

CONVULSIONS IN EARLY LIFE. That epilepsy occurs in early childhood, or that in some cases so-called "teething convulsions" are the first manifestation of epilepsy, cannot be disputed. W. Bullard and C. W. Townsend¹ have examined all the out-patient records of the Boston Children's Hospital from 1883 to December 31, 1894, and out of 7180 cases in all they have found 79 entered as eclampsia. The results of their study are: 1 per cent. of the children applying for treatment at the Children's Hospital came for convulsions; 10 per cent. of children between five and twelve years of age gave a history of convulsions; cases that appear to be due to some manifest reflex cause may turn out to be true epilepsy; other cases in which the attacks occur frequently and without apparent cause may suddenly recover, at least for a considerable period; children who have had convulsions may be strong and free from nervous tendencies in later life, although those nervous tendencies seem to be more common in those who have had convulsions.

SENILE EPILEPSY. Many persons with epilepsy die young, and sometimes a fatal termination is caused by an accident occurring during a convulsive attack; still, quite a number of persons in whom epilepsy has begun early in life live to be aged, even though the convulsions may persist. This is not what Redlich and others mean in speaking of senile epilepsy. In a paper written on this subject, Redlich² refers only to those cases which begin in the senile period, and these are more numerous than some are inclined to admit. The epilepsy of later life is like that of the earlier period in its manifestations, and the designation of senile epilepsy is a somewhat arbitrary one. Mendel classed the cases occurring after the age of fifty years as *epilepsia tarda*, while Maupaté and Lüth each placed the dividing age for this form of epilepsy at thirty years. Cases occurring still later than forty years have been described as senile epilepsy, and Redlich classes under this heading all those developing after the age of sixty

¹ Boston Medical and Surgical Journal, March 7, 1901, p. 233.

² Wiener med. Wochenschrift, 1900.

years. Senility is manifested at different ages in different persons, and if we are to employ the designation of senile epilepsy we must decide on some age at which it may be applicable. Many persons at sixty years are exceedingly active and show little evidence of senility, but they are, nevertheless, on the downward path of life. Epileptic attacks have first appeared in a person as old as eighty years, so that there is no age at which a person becomes exempt from epilepsy. Symptomatic epilepsy, indicative of some gross lesion of the brain, as tumor, should not be spoken of as senile epilepsy; and Redlich excludes also all those cases in which convulsions occur as the result of nephritis or diabetes, but he acknowledges that the distinction sometimes may be very difficult. *Cysticercus of the brain* may cause symptoms like those of idiopathic epilepsy developing late in life, but certainly such a condition is exceedingly uncommon in this country, and much more uncommon than on the Continent of Europe. Redlich, depending on the German literature, speaks of *cysticercus* of the brain as relatively frequent in later life, and as a cause that should always be considered in cases of senile epilepsy. The causes of early idiopathic epilepsy are also those of the senile form, and in the latter are more effective, because the system is less vigorous; but it is questionable whether heredity is as important in the causation of the late form as of the early. Mendel, Gowers, Féré, and others believe that hereditary tendency to epilepsy may be detected in the tardy epilepsy. In Redlich's cases of senile epilepsy, about a dozen in all, hereditary influence could be traced to some extent, but he is cautious in attributing much importance to this cause. It seems to him doubtful whether a hereditary tendency to the disease would exist during the active period of life and first become manifest after the age of sixty years. In cases in which convulsions appear in early life and then cease during many years the influence of heredity is more evident. Alcohol, syphilis, and cranial injuries are important causes of senile epilepsy, while infectious diseases have less influence in the causation of late epilepsy than of early epilepsy.

Redlich is very skeptical in regard to the existence of cardiac epilepsy—*i. e.*, epilepsy caused by cardiac disease. The reported cases are not very numerous, which is remarkable when we remember the frequency of epilepsy and of cardiac lesions, and it is not clearly shown that the relation of cause and effect exists in the reported cases. The argument that no other cause but the heart disease can be found is, of course, utterly worthless, as we know so little about the pathogenesis of epilepsy. Of more value is the statement that in some cases treatment directed to improvement of the heart trouble has been of benefit in lessening the epileptic attacks after bromide has failed to do so.

Arterio-sclerosis is so important in the causation of senile epilepsy that it demands careful study. Redlich rejects, and it seems to me properly, the view of Mahuert that the convulsive attacks are produced by the mechanical irritation of the cortical nerve cells by rigid cerebral vessels. It seems surprising that such a theory could be seriously advanced. Redlich does not regard the explanation that the attacks are caused by anaemia of the brain as entirely satisfactory, as the attacks produced by anaemia are not identical with those of true epilepsy; but he holds that the nutrition of the brain is impaired by arterio-sclerosis, and this in association with an epileptic disposition has a causative relation to epilepsy. It is difficult to make a distinction between the effects produced by anaemia and the impairment of the tissues of the brain from arterio-sclerosis. Anaemia, if long continued, seems to produce imperfect nutrition and structural alteration as a consequence.

In two cases of senile epilepsy Redlich found miliary sclerosis of the cerebral cortex as the probable cause of the attacks, but this condition does not exist in every case of senile epilepsy, and was not present in three cases in which Redlich sought it. This sclerosis is not precisely like that found by Chaslin in brains from epileptic persons, but may bear some relation to it.

Mendel believes that senile epilepsy is milder in manifestations than the early form, and that the intellect and memory are less affected—an opinion not accepted by Sympson or by Maupaté. Redlich also can find little difference in the clinical phenomena of early and late epilepsy.

The senile epilepsy is to be treated as other forms of idiopathic epilepsy.

In the discussion following the reading of this paper Schlesinger said he fully agreed with Redlich in the conservative position he had taken in regard to cardiac epilepsy. Schlesinger, during a long period, has made inquiries concerning the existence of epilepsy in the cases of cardiac disease that have come under his observation, and has carefully examined the heart in his epileptic patients, but only in one case has he been able to find a relation between cardiac disease and epilepsy.

I was unable from lack of space to refer to Redlich's paper in my digest of last year in *PROGRESSIVE MEDICINE*, but the paper is too important to be ignored.

EPILEPSY DEVELOPING A LONG TIME AFTER INJURY. W. W. Keen's¹ case, in which epilepsy followed seven years after trauma of the head, has some unusual features, and in some respects resembles

¹ American Journal of the Medical Sciences, July, 1901, p. 1.

one that was studied recently by L. W. Steinbach and myself. Keen's patient was thrown from a horse, and struck on the right side of his head, over the occipital and posterior portion of the parietal bones. Fracture of the cranium occurred, and portions of bone were removed. The patient was said to have been unconscious for nine days, but when he recovered consciousness there was no paralysis either of motion or of sensation. Seven years later he had his first epileptic convulsion, and has had a number of attacks since then. The convulsions were not Jacksonian in type. An exploratory operation was thought advisable. After the dura was opened a thin, dark-colored sac, apparently the wall of a cyst, was found about 1 cm. below the dura. This cyst was opened, and probably several ounces of fluid escaped. The cyst was found to be a portion of the lateral ventricle, and was drained for about two hours. This, Keen says, was the first time he ever laid the ventricle widely open—almost as widely as one opens a box by removing the lid—although he had in other cases opened the ventricles upon both sides and irrigated the brain from side to side. It is important to know that in this case very little effect was produced by the escape of a large quantity of cerebro-spinal fluid. One hesitates to explain the case of another physician, but this case seems to me like one in which the cyst possibly was caused by hemorrhage and softening of the brain-tissue. In the case studied by L. W. Steinbach and myself, and referred to above, a large cyst was found likewise beneath fractured cranial bones, and was evidently the result of hemorrhage and softening. I would interpret Dr. Keen's case—as he himself suggests—as one in which there was destruction of the cerebral tissue between the ventricle and the dura at the time of the accident, and in which absorption of this degenerated tissue occurred later, causing a cyst in connection with the ventricle.

In another case in which hemiplegia and epilepsy followed a bullet wound of the brain a piece of bone was found embedded in the brain. This had remained buried within the cerebral tissues nearly fourteen months, and had produced an abscess beneath it.

TREATMENT OF EPILEPSY. Much has been written on the treatment of epilepsy by a diet containing little chloride of sodium, but Schaefer's¹ (Pankow) report is more encouraging than is that of some others who have tried this form of treatment. He has chosen three patients for his investigations, all of whom had epileptic attacks since youth, and had been little benefited by drugs of any kind. The attacks occurred about twenty to thirty times a month. The mental condition of the patients was bad. The diet without salt (sodium chlo-

¹ *Neurologisches Centralblatt*, January 1, 1902, No. 1, p. 5.

ride) was employed for about a month and a half, and after five to eight days all attacks ceased, the mental condition was improved, and the results of the treatment were astonishing. After this diet was stopped, and the ordinary diet was employed again, the attacks soon recurred—*i. e.*, within six or nine days after the ordinary diet had been begun, and the attacks were more serious than they had been. In one patient twelve attacks occurred within eight days, and in the other two nineteen attacks within the same time. It is not surprising that Schaefer believes that in a relatively salt-free diet we possess a very powerful means of treating epilepsy, but his report may be misleading. It is not probable that in many cases epileptic attacks can be entirely stopped by removing chloride of sodium from the diet, but the treatment is so simple that it should be given a fair trial.

Rudolf Bálint,¹ after experimenting on epileptic patients with a diet containing little chloride of sodium, concludes that such a diet should be tried in every case of epilepsy; that the treatment is more successful in an institution, where the patient can be kept under observation, and that in addition to diminishing the amount of common salt a small dose of a bromide should be given. The bromide may be placed in the food, especially in the bread. These conclusions are similar to those of many other investigators.

As a result of some investigations on epileptic patients, Heinrich Schlöss² concludes that an exclusive milk and vegetable diet does not diminish the number of epileptic attacks, and that an exclusive meat diet does not increase the number. A diet containing little sodium chloride and the administration of a bromide have a very beneficial effect, inasmuch as the attacks become less numerous, but the body weight becomes less and the patient weak. A fatty and acid diet and a small amount of alcohol daily do not increase the number of attacks.

It is to be hoped that such favorable results as those obtained by M. Clayton Thrush³ in the *treatment of epilepsy by Solanum Carolinense* will be obtained by others. He has found it very useful in grand mal of idiopathic type without hereditary taint, and where the disease has begun beyond the age of childhood. It is useful in hystero-epilepsy, but less so in petit mal. The fluid extract of the drug made freshly, he says, is the ideal form for administration, given in ascending doses, commencing with 1 fluidrachm and increasing to the full constitutional effect. It should be employed for months, or a year, even though cessation of the attacks may occur. No toxic symptoms follow

¹ Wiener klin. Wochenschrift, June 10, 1901, No. 23, p. 617.

² Ibid., November 14, 1901, No. 46, p. 1124.

³ Philadelphia Medical Journal, May 3, 1902, p. 802.

its free administration, and the mental faculties are not impaired by its use.

In regard to the use of *chloretone in epilepsy*, Wharton Sinkler¹ believes that the drug is useful and safe in proper doses. It is apparently most efficient in cases of petit mal, and is on that account valuable, as these cases are not much influenced by the bromides. It need not be given in large doses to accomplish good results, and after it has been used for a time bromides seem to exert more influence than when given prior to the employment of chloretone. As yet we do not know for how long a time or in what doses chloretone may be administered without producing ill-effects. Three grains at bedtime, or, if necessary, five grains once or twice daily, may be safely tried.

The injection of drugs into the spinal canal by means of lumbar puncture has not proven so far to be a very useful method of treatment for diseases of the nervous system. At present spinal anæsthesia by means of the injection of some anæsthetic into the vertebral canal is on trial by the profession. Trephining the skull, with intracranial injection, has been highly recommended in tetanus, as in this way the nervous tissues are more readily affected. J. William White² has followed a similar method in the treatment of epilepsy, but he places it before the profession with admirable conservatism. "I beg to be understood," he says, "as merely submitting the method to the profession for further trial and elaboration, or, perhaps, for rejection. I am not myself convinced that it has any real value." By his method a half-inch button of bone is removed with a small trephine. The dura is left intact. Thirty minims of a sterile 2 per cent. solution of eucaïne is then injected into the brain substance at the centre of the trephine opening, the point of the needle being introduced about three-quarters of an inch. The needle is gradually withdrawn as the last ten minims of the solution are injected. The patient on the day of operation, and the following day, should receive full doses of bromides. The injections are to be repeated at intervals, the proper length of which is to be determined by experience. White says that in two cases in which he has tried this method of treatment the safety of the procedure was not entirely established, as in one case the convulsions which followed one of the injections were of very marked severity. Neither can it be said that the results obtained were noticeably better than those that have followed very miscellaneous operative procedures. He believes, however, that there are possibilities of benefit by this line of treatment which justify him in placing it before the profession. One of the most admirable features of this paper is its conservatism.

¹ Therapeutic Monthly, July, 1901, p. 86.

² Philadelphia Medical Journal, June 15, 1901, p. 1162.

Hysteria. HYSTERICAL APHASIA AND HEMIPLEGIA. Hysteria assumes so many forms that there is great danger of calling that hysteria which should be regarded as a manifestation of organic nervous disease. An hysterical person may become dumb, but seldom does he or she exhibit motor or sensory aphasia. Hysterical aphasia associated with right-sided functional paralysis of the body might be extremely difficult to recognize; therefore, we may devote some attention to a case reported by Georges Guillain,¹ which he believes is of this type. On questioning the persons who had known the early history of the patient's disease it was found that the man had become hemiplegic after mental excitement, and had been confined to his bed during three months. He had disturbances in the function of the sphincters during six weeks. He did not walk again until seven months had elapsed. When he was examined his hands appeared cyanosed, the right upper and lower limbs were cold, the Achilles tendon, the knee-jerk, and the reflexes of the upper limb, all on the right side, were exaggerated. This condition in association with speech disturbance Guillain acknowledges suggested strongly organic nervous disease—*i. e.*, hemiplegia from a cerebral lesion. Indeed, the case was considered as such for a long time; but Guillain thinks it was one of hysteria, because the paralysis developed after mental excitement, in a man who was not syphilitic, was without cardiac disease, and young. The gait was not like that of organic hemiplegia. He had less power on the right side, but he walked without difficulty, and did not drag the lower limb, and delicate movements of the right upper limb were possible. The reflexes, while increased on the right side, were more increased when the patient's attention was fixed upon them. It has been thought by some—notably by Ferrier and Roth, as shown by the remarks during the Congress in Paris—that in hysterical hemiplegia the tendon reflexes are usually normal, and that exaggeration of these reflexes is exceptional. Such was not the opinion of Babinski, and it seems to me that Babinski is probably correct. Exaggeration of reflexes is certainly not very uncommon in hysteria. The Babinski reflex was absent in Guillain's case, which is at least a point in favor of his diagnosis of hysterical hemiplegia. Spontaneous speech and speech in repetition were much affected, and a certain amount of paraphasia existed; but the patient did not make an effort to express himself and to make himself understood, and showed no exasperation over his inability to use words properly. This was possibly a case of hysterical aphasia and hemiplegia, but one might hesitate from reading the account to be quite certain of the correctness of this diagnosis. Many sins of diagnosis are committed in the name of hysteria.

¹ *Revue Neurologique*, April 30, 1901, p. 385.

The case of so-called hysterical aphasia described by Mann, and discussed previously by me in *PROGRESSIVE MEDICINE* under the heading of Aphasia, is interesting in connection with Guillaín's case.

HYSTERIA IN CHILDHOOD. B. Sachs' view that hysteria is rare in childhood does not find acceptance by certain German writers. Oppenheim has seen hysteria in children four to six years of age, and often in children from eight to ten years old. Bruns expresses surprise concerning Sachs' statement. There seems to be a more widespread opinion that neurasthenia is rare in childhood, but Alfred Saenger¹ contends that neurasthenia in childhood is as common, or even more common, than hysteria. During eleven years Saenger has been occupied in studying the nervous affections of children coming to a polyclinic, and has found that many cases of asthenopia are of nervous origin. Nervous asthenopia has not been sufficiently studied, and Saenger has frequently observed it in children between two and fourteen years of age, when it may be the only symptom the patient complains of. Children who are neurasthenic are usually anæmic, easily excited, and cry easily. They are easily fatigued, and have palpitation of the heart, vertigo, and vasomotor symptoms. They are often mentally depressed, have poor appetite, are often constipated, and sleep is disturbed. They may have different kinds of phobias. The eyelids often tremble when the lids are not firmly closed.

In hysteria in childhood Saenger has found the little patients usually more intelligent than in neurasthenia, but the face has lost the child-like expression. Hysteria in childhood, unlike that in adults, is often monosymptomatic, but careful investigation will sometimes disclose other stigmata. Saenger has observed hysterical scoliosis in childhood, and has cured it. He emphasizes the occurrence in childhood of hysterical anomalies produced by muscular contraction which are more easily overcome than similar deformities in hysterical adults. The importance of the recognition of hysteria in childhood is well shown by a case in which the diagnosis of tuberculosis of the parietal bone was made. Notwithstanding Saenger's conviction that the case was one of hysteria, and not of organic disease, an operation for removal of a tuberculous lesion was undertaken. The parietal bone and dura were found to be normal, but the suggestion afforded by the operation cured the boy of the severe pain in the parietal region. Saenger has seen hysterical coughing and aphonia often in childhood, and occasionally hysterical disturbance of deglutition, stammering, and tremor. Blepharospasm lasting a very long time, without demonstrable ocular disease, is usually, he thinks, hysterical, and may be mistaken during a very long period

¹ *Monatsschrift f. Psychiatrie und Neurologie*, May, 1901, p. 321.

for ptosis. Hysterical ptosis he has seen often, and less frequently hysterical amaurosis, but hysterical hemiplegia and paraplegia in childhood he has not observed. Nocturnal enuresis may be the only hysterical sign. Hysterical convulsions are rare in childhood.

A combination of hysteria and neurasthenia is not uncommon in childhood, and in these cases nervous asthenopia plays an important rôle, characterized by dread of light and pain in the eyes and head. The cause is chiefly rapid fatigue of the muscles of accommodation and functional insufficiency of the retina. Michel has spoken of this condition as neurasthenia of the eye.

Hereditary neuropathy Saenger has found in children whose parents had neurasthenia, hysteria, etc. Convulsions are common in these children in early life, and later tic-like conditions and choreiform movements. These children are often obstinate and easily frightened, and sometimes have most unlovable dispositions, and often masturbate.

Hysteria in childhood Saenger believes offers a better prognosis than hysteria in adult age, because the child is more open to suggestion. It is well to keep these children with neurasthenia or hysteria from school, for a time at least. As most of them are anæmic, iron will be required, and electricity will afford a good means of suggestion. Where the case is a severe one the child should be taken into an institution. Hysteria in childhood may be latent or only imperfectly manifested, and possibly if recognized may be controlled and the hysterical manifestations held in check in the later life of the child. Physicians should be aware that pronounced hysterical stigmata may be found in childhood, as thereby they may form correct diagnoses when they come in contact with these neurotic children.

HYSTERICAL DYSPHAGIA. A peculiar disturbance of deglutition has been observed by Rossolimo.¹ It develops in persons from a neurotic stock who may have stigmata of degeneration, and who are in early adult life. It may appear several times and be very persistent, and be either alone or in association with other symptoms. It is not dependent on any organic change in the digestive canal or nervous system, and seems to be the result of mental disorder.

HYSTERICAL HEMIANOPSIA. In a case in which the clinical history is not sufficient to permit a diagnosis of hysteria, Zimmerman² observed left homonymous hemianopsia, which he believed to be hysterical in nature, because the hemianopsia was temporary and was associated with marked peripheral contraction in the retained fields; because of the absence of any other symptoms of organic disease and the very definite

¹ *Neurologisches Centralblatt*, 1901, Nos. 5 and 6.

² *Ophthalmic Record*, March, 1901.

association of the hemianopsia with delayed and painful menstruation, and because of the hemianopsia after the partial cure of the pelvic disorder.

Hysterical hemianopsia is exceedingly rare, and it is much to be regretted that more thorough search for hysterical stigmata could not be made. There is no statement in regard to variation in the size of the retained fields, and this variation has been observed in hysterical hemianopsia.

PECULIAR ATTACKS CAUSED BY LAUGHTER. A remarkable case is reported by Oppenheim.¹ A girl, aged eighteen years, in good health, had peculiar attacks brought on by laughing. Her eyes became fixed, her face distorted, objects in the hands were dropped, head and trunk inclined forward, or the patient fell to the ground. It was uncertain whether unconsciousness occurred, but she did not bite her tongue or have involuntary micturition. The attacks lasted only a few seconds. These attacks occurred almost always after intense laughter, but not from other cause, and had been observed for about one year. Convulsions do not seem to have been present. Very soon after studying this extraordinary case Oppenheim was called to see another similar one. A man, aged forty-five years, also in good health, became unconscious momentarily after intense laughter, but convulsions did not occur. The face became red and the eyes staring, but there was neither biting of the tongue nor involuntary micturition. Laughter produced by irritation of the sole of the foot did not cause an attack in either case. No stigmata of hysteria could be detected. There are no similar cases reported in the literature, and Oppenheim has found it impossible to classify these cases under hysteria, epilepsy, or any known disease. They have some resemblance to the laryngeal crises of tabes or to the involuntary micturition during laughter described by Von Bechterew in persons who have no disease or weakness of the urogenital apparatus. It is not possible to ascribe these attacks to organic change in the medulla oblongata; in short, these cases at present are a riddle for which no solution can be found. Further study of similar conditions may throw some light on the subject.

Neurasthenia. TRIONAL IN NEURASTHENIA. Trional is given quite freely in neurasthenia and other diseases, and poisoning by the drug is certainly exceedingly rare, although Stuart Hart² says the trional habit seems to be readily acquired. Hart's paper causes us to believe that trional may be more harmful than many suppose. He has had a case of trional poisoning, and he collected some other cases from the

¹ *Monatsschrift f. Psychiatrie und Neurologie*, April, 1902, p. 241.

² *American Journal of the Medical Sciences*, April, 1901, p. 435.

literature. He refers to the interesting fact that the occurrence of neuritis has noticeably increased since the introduction and general use of the coal-tar products as remedies. It would not have been amiss if he had given the evidence for the correctness of this statement, as it is such an important one. Hart's patient was a woman, aged fifty years, who at one time had taken a large amount of trional, and was continuing its use when she came under his care. She was induced to gradually diminish the amount, and finally to give it up entirely during a period of several months. At this time she was exceedingly neurasthenic, but beyond a moderate anæmia had no organic disease. About the middle of February, 1899, she suffered from obstinate insomnia, and resumed taking trional, limiting the dose to 15 grains every other day, with an occasional intermission of three or four days. This continued until the evening of April 20th, when quite suddenly she developed pain in the abdomen of a severe, colicky character, with extreme nausea and vomiting, and later other symptoms of poisoning. The whole amount of trional ingested was about thirty doses of 15 grains each, a total of 450 grains for the two months. The onset presented the picture of a case of acute gastro-intestinal poisoning. Following this there was an acute degeneration of the kidneys and the presence in the urine of hæmatoporphyrin. The first of the nervous manifestations was a neuritis of the vagus and a subsequent trophic disturbance in the heart muscle, resulting in dilatation and valvular insufficiency. The greater implication of the extensors of the wrist and feet suggested a selective action of trional for certain nerves or groups of cells in the anterior horns of the cord. The nerves recovered their functions in the same order in which they were impaired, viz.: first the vagus, then those of the extremities of the left side of the body, and lastly those of the right side. Hart says that some years ago Morro demonstrated that trional has a cumulative action, and that it should not be given continuously, and while being used the bowels and kidneys should be kept active.

Paralysis Agitans. That paralysis agitans should be looked upon as a glandular disease will probably be a surprise to many—and yet it is precisely so regarded by Lundborg¹—as a manifestation of disordered thyroid function. Some years ago Möbius called attention to the resemblance of some of the symptoms of Graves' disease to those of paralysis agitans, viz.: tremor, sensation of warmth, increased perspiration, increased pulse-rate, etc. Lundborg acknowledges that in the few cases of paralysis agitans in which the thyroid treatment has been employed it has not been of much benefit, but this fact should not be

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xix., Nos. 2-4, p. 268.

advanced as an argument against his view, which he believes is strengthened very materially by a case he observed. His patient was a woman who had paralysis agitans and myxœdema, and the symptoms of the two diseases developed *pari passu*, and he therefore calls the disease from which his patient suffered paralysis agitans myxœdematosa. All this is very interesting, but it cannot at present be regarded as very definite. Whenever two diseases develop simultaneously in the same person it does not necessarily follow that they are one and the same.

Adiposis Dolorosa. Within the last few years adiposis dolorosa, as described by Dercum, seems to have gained almost universal recognition. One of the cases recently reported is by C. Achard and C. Laubry.¹ The adiposis in their case was nodular in the extremities, but diffuse over the abdomen, and the feet and hands escaped, as is well shown by the photograph accompanying their report. Pain in their case was spontaneous, and was also increased by pressure. The disease so far seems to be almost confined to the female sex; and yet Marie, in the discussion of Achard and Laubry's paper, said he had in his service at Bicêtre a patient—presumably a male—who had an excessive development of fat, situated similarly to that of adiposis dolorosa, not implicating the face and extremities, but implicating especially the trunk and the roots of the limbs. We may conclude from this that by escape of the extremities is meant hands and feet. These masses of adiposis sometimes caused slight pain. Marie has nothing more to say in the brief report of his remarks, and it would be interesting to know whether he regards this case as belonging to adiposis dolorosa as a *forme fruste*. We owe to Marie the recognition of several obscure types of disease, and it is not at all impossible that he may have looked upon his case as an imperfect manifestation of adiposis dolorosa.

Adiposis dolorosa is much more common in the female than in the male, but Dercum² reports the fourth case occurring in the male. This case was exceedingly interesting on account of the excessive amount of fat, especially upon the trunk. The condition of adiposis dolorosa, however, is more than one of painful fat; and while this is, as Dercum says, the most prominent symptom of the disease, marked or even grave asthenia and psychic or general nervous symptoms are prominent. Dercum ascribes great importance to these last-mentioned symptoms. The asthenia, he believes, does not depend directly upon the fatty deposit, as in a case in a woman reported by him the fatty deposit was

¹ Revue Neurologique, April 30, 1901, No. 8, p. 419.

² Philadelphia Medical Journal, March 1, 1902, p. 396.

not at all marked upon the trunk and to a comparatively slight extent upon the arms, and yet a very few simple movements of the arms brought on decided fatigue. Mental depression is common in adiposis dolorosa, and sometimes hallucinations, great irritability, neurasthenia, hysteria, or epilepsy is present. It seems uncertain whether these are merely associated or essential symptoms of the disease.

A contrast to adiposis dolorosa is afforded by a condition called by A. Carducci¹ adipose analgésique. His patient, a woman in middle age, began to grow weak, and at the same time she acquired much flesh. The enlargement implicated only the subcutaneous tissue, and was pretty uniformly distributed. Tactile sensation was intact, but pain sensation was everywhere diminished, and completely lost where the adipose was most marked. There was also some diminution of temperature sense. The patient had a slight degree of exophthalmia and impairment of vision, but had no goitre and no tremor. This affection differs from adiposis dolorosa in the form of the enlargement and in that in the former the disturbances of sensation are objective and in the latter subjective, although pain is produced in adiposis dolorosa by pressure.

Intermittent Lameness. H. Higier² has seen a number of cases of intermittent lameness, or, as he prefers to call it, angiosclerotic paroxysmal myasthenia. It is unfortunate that diseases, especially those very imperfectly understood, should be called by many different names. The affection in question is known as intermittent claudication, ischæmic painful paralysis, angiosclerotic intermittent dysbasia, intermittent muscular paresis, endarteritis of the legs, and surgical spontaneous gangrene. According to Higier's experience, the symptoms always begin with paræsthesia in the legs, and later the paroxysmal myasthenia occurs. It is singular that the intermittent lameness is more common among the Jews. In Higier's eighteen cases, seventeen were in Jews. One might be tempted to explain this predominance of the disease by the liability of the Hebrew race to functional nervous diseases, especially as organic vascular disease alone has been regarded by some as insufficient to explain the symptoms. Higier also recognizes the importance of a neurotic taint in intermittent lameness. His patients were not advanced in years; about half of them had not reached the fortieth year, and most of them were males. Higier lays little importance on syphilis, gout, and diabetes as causal agents; but the excessive use of alcohol and tobacco, he thinks, may hasten the development of the symptoms. Exposure to cold does not seem to have been a common cause in Higier's cases, and this is interesting, inasmuch as some authors

¹ La Semaine Médicale, March 27, 1901, p. 103.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xix., Nos. 5 and 6, p. 438.

have attributed much importance to such exposure. The pain in intermittent lameness is not always the same; it may occur only after walking, when it is more likely to be in the calves; or, on the other hand, when the patient is in bed, and then it is in the toes. Higier refers to the resemblance existing between intermittent lameness, erythromelalgia, and Raynaud's disease. He has little new to offer in the way of treatment, but suggests that in desperate cases, where there is a tendency to ulceration, elongation or resection of nerves might be useful.

Although intermittent lameness seems to depend on disease of the vessels supplying the lower limbs, a condition of general arteriosclerosis, according to Goldflam,¹ does not exist, and there are no symptoms of atheroma of the cerebral vessels, and usually none of nephritis or cardiac disease. Most of Goldflam's patients were between thirty and forty years of age, and were of the Jewish race, and all were males. Goldflam is unable to confirm the opinion expressed by Charcot that diabetes is in close relation to intermittent paralysis. A neuropathic diathesis seems to be present in some cases, and in certain families more than one member may be afflicted with intermittent lameness; but it is curious that women, who are especially liable to functional nervous diseases, so seldom have this paralysis. Perhaps the explanation is to be found, as suggested by Goldflam, in the fact that men are more exposed than women to dampness and changes of weather; and that smoking—which, according to Erb, is very liable to cause alteration of the vascular walls—is more common among men. In Goldflam's cases syphilis and alcohol seem to have been of very little importance, for the former was found in only one of his twenty-four patients. Goldflam does not suggest anything very new in the treatment of intermittent lameness. Overexertion of the lower limbs must be avoided, as well as everything that may cause vasomotor disturbance. The feet must be kept warm and dry. The use of tobacco, alcohol, etc., is not to be permitted. Drugs are of little service, and the most benefit is to be obtained from hygienic and dietetic treatment.

Riesman's² patient was a man, aged thirty-nine years, who denied having had syphilis. He worked hard for many years as a travelling salesman, and was much exposed to cold and wet. All his life he had used tobacco to excess. About fourteen months ago, while walking, he suddenly had a sensation as if water were running down the left leg, and experienced a sharp pain in the sole of the left foot. Ever since then he has found that although his left leg feels natural when he starts, as soon as he walks a few squares he has pain in the calves, especially

¹ *Neurologisches Centralblatt*, March 1, 1901.

² *American Medicine*, May 25, 1901, p. 343.

the left, and the legs feel, to use his own words, as if they weighed a hundred pounds. After resting a few minutes he is able to resume his walk, but the pain and heaviness quickly return. While he is in his factory he walks about a great deal, with scarcely any trouble, which is, as Riesman says, a very curious feature, and for which he offers as an explanation the fact that the patient's mind is centred upon his business, and he does not think of his ailment, and also that the greater resilience of a wooden floor may be a factor. Examination of the arteries of the feet showed that pulsation was entirely absent in both dorsalis pedis vessels. The posterior tibials pulsed, the left less strongly than the right, which is interesting, as the symptoms in the left leg were more severe. A combination of iodides and mercury was useful in the treatment of the case, but the relief was temporary. Bromides and nitroglycerin seemed to help him more than anything else. When he was last seen by Riesman, April 16, he was better than he had been for months, and could walk four or five squares without a return of the pain. Riesman advises in the treatment of recurrent lameness a diet largely vegetable and the use of the alkaline mineral waters. Exercise should be in moderation, and exposure to cold and dampness should be avoided. His is a typical case of intermittent lameness, and is one of the very few that have been reported in this country.

The different names that have been proposed for intermittent lameness appear to Walton and Paul¹ unsatisfactory, because they are misleading in that they unduly emphasize an unessential feature of the disorder (lameness), while drawing no attention to the essential symptom, namely, intense paroxysmal pain, and therefore they propose the name of "angina cruris." The clinical picture of "angina cruris," as given by Walton and Paul, consists of more or less frequent brief attacks of intense paroxysmal pain in the leg, affecting, as a rule, the same region, oftenest the calf, recurring at irregular intervals, generally when in the erect position, but not infrequently while the patient is in bed, often accompanied by local asphyxia and cyanosis, and usually in a limb in which pulsation is wanting in the dorsalis pedis or the posterior tibial artery, or both. The attack resembles in its severity that of painful facial tic. The underlying cause is probably a restricted circulation, whether resulting from the degenerative arterial changes incident to advancing years (atheroma), from congenital predisposition to feeble circulation and to arterio-sclerosis, or from acquired arterial disease (obliterating arteritis). Vasomotor spasm (common in persons of neuropathic inheritance) is generally regarded as the exciting cause of

¹ Boston Medical and Surgical Journal, April 3, 1892, No. 14, pp. 351-357.

the attack, combined, perhaps, with sudden accession of blood-pressure. Walton and Paul suggest that certain familiar but unclassified pains may represent a modified form of the malady. It seems to me they slight the lameness both in this excellent description and in the name "angina cruris," and the lameness has been regarded as very important by Charcot, Erb, and others. It is exceedingly probable that in the abortive form described by Walton and Paul "angina cruris" is not a very rare affection, but it seems equally true that in the form described by Erb and others intermittent lameness is not common. It is doubtless true that not a few sufferers from so-called simple cramps will be found on careful study to fall into the class of modified "angina cruris." The chief difficulty lies in the inability to classify these abortive forms of functional disturbance, as well illustrated by the recent work of Cassirer on the trophoneuroses. Acroparæsthesia, erythromelalgia, intermittent lameness, or "angina cruris," etc., have certain features in common. The intermittent lameness is more common in males, but Walton and Paul have found that the modified form, or "angina cruris," is quite as common among females. They believe that the occurrence of painful cramps in combination with pulseless arteries is too striking to be a mere coincidence, and yet they acknowledge that painful cramps may exist when the arteries are not pulseless. They recommend that persons with "angina cruris" should avoid violent continued exercise and extremes of temperature, and if tendency to flat-foot exists, this should receive attention. If the condition is well developed the patient should be kept in bed for a certain period, and if he is allowed to walk he should avoid too great exercise. Strophanthus and nitroglycerin should be tried, and iodide of potassium may be of service. Bandaging the affected limb has appeared useful. Stress is laid upon the importance of examining the dorsalis pedis and posterior tibial arteries in all cases in which impaired circulation may be partly the cause of changes in the central nervous system.

Reflexes in Chorea. Clinicians are constantly on the alert for the discovery of a new reflex or the modification of an old one. W. Gordon¹ thinks he has discovered an important change in the knee-jerk in chorea. It seems to have attracted no attention from other observers. It is not present in every case, and not constantly present in the same case. When the patient is recumbent, if one raises the knee, allowing the heel to rest on the couch, making sure that all the muscles of the limbs are relaxed for the time being, and if one then tests the knee-jerk in the usual way, the foot is found to rise more or less smartly; but instead of falling back immediately it remains suspended

¹ British Medical Journal, March 30, 1901, p. 765.

for a variable time—hung up, as it were—and then slowly sinks back to its initial position. This is the description as given by Gordon. Sometimes there are variations in the reflex. The peculiarity may amount merely to a sluggish descent following an ordinary ascent, or an ordinary knee-jerk is obtained; but just as the foot is beginning to fall again it is caught in mid-air—as it were, hung up by after-thought—and held for a time or even raised to a higher level than that reached in the first jerk. Sometimes the knee-jerk passes at once into an active, more or less persistent, even apparently voluntary, rigid extension of the limb. Between these varieties there is every gradation. Mild cases show the effect best, as in them it is not interfered with by frequent and extensive movements. In hemichorea it is found only on the choreic side, provided all the movements on the other side are practically *nil*. Gordon says he has found this modification of the knee-jerk in many cases of chorea, but never in non-choreic cases. He attempts to show how important this knee-jerk may be. The hanging up of the foot when it has risen in the knee-jerk is not merely due to substitution of a long contraction of the extensors for the ordinary short one, such as one might be led to attribute to some change in the muscle irritability. The cases in which it is hung up by after-thought—that is, when there is a distinct interval between the summit of the knee-jerk and the subsequent suspension—and, still more, the cases in which this suspension passes into or is replaced by a definite active extension, show that the knee-jerk itself has evoked an involuntary movement. The involuntary movements of chorea seem to Gordon to be a sort of an overflow of impulses, and many involuntary movements, he believes, grow out of voluntary efforts. If a patient in whom mild chorea exists raises both arms vertically, with the hands open, there may or may not be slight choreic movements of thumb or finger, or both. If he is told, while the arms are held up, to put out the tongue, at once existing movements of thumb and fingers are intensified, or if previously absent are now evoked. The hung-up knee-jerk seems to point in the direction of overflow of impulse. Gordon reports a case in which this modification of the knee-jerk was of diagnostic value. A small boy was brought to him with the complaint that he sometimes gave way at the knees without warning, and landed on the floor. Rest, care, and living in the hospital seemed to prevent his falls. On his return home the symptoms returned, and he was brought back to the hospital, with a slight tendency to involuntary movement. His right knee-jerk was hung up, and on testing him with his hands up and the tongue out it became clear that he was suffering from chorea. This change in the knee-jerk is certainly worth consideration, and should be sought for in cases of chorea.

Convulsive Tic. Two peculiar forms of convulsive tic, in which the movements are those of laughing or snuffing, as when snuff is taken, are described by von Bechterew.¹ These apparently purposive movements occur at most inopportune moments, and may be very embarrassing to the afflicted person. Like other forms of convulsive tic, they are more likely to occur in neurotic persons.

CAUSES OF CONVULSIVE TIC. Henry Meige and E. Feindel² have attempted to ascertain the provoking cause of convulsive tic. Tic, according to Charcot, is the frequent repetition of certain complex automatic movements, of a physiological character, but exaggerated. It is the exaggeration of movements that seem to serve a definite purpose, but it is the character of acts and of natural gestures. A hereditary mental predisposition is necessary for the development of convulsive tic. The provoking cause is often very difficult to determine, but in some cases the movements are the result of imitation, especially when they occur in the young. A child is inclined to copy the movements of others, especially if he comes of a neurotic stock, and the association with a person who has convulsive tic may cause the appearance of similar movements in the child. The tic may be shown in contraction of the eyelids or in contraction of the external ocular muscles, and may have been started by some irritation or by some disturbance of vision. Glasses may cause the tic to disappear. Tic of the nose may be started by coryza or some form of inflammation; tic of the lips or tongue by dentition or a similar cause. Tic of the head or shoulder may be the result of uncomfortable collars or of the mode of wearing the hair. By the name of mental torticollis Brissaud has described spasmodic movements of the head and neck which are the consequence of frequent repetition of a movement executed at first deliberately; for instance, a woman, while sewing at a window, turned her head occasionally toward the window, to look out. After a certain time she found that the position of the head was comfortable only when the head was turned toward the window, and finally to turn her head away from the window it became necessary for her to use her hands. The cause of tic should be carefully searched for, as after its removal the tic may disappear.

Tetany. Hans Haenel³ describes a remarkable case of spasm from lead poisoning. The patient was a typesetter, who had colic and the blue line on the gums, and, in addition, painful tetanic contraction of groups of muscles. These contractions had some resemblance to those of tetany; they were without loss of consciousness, and could be produced by pressure over peripheral nerves. Chvostek's sign (contrac-

¹ Centralblatt f. Nervenheilkunde und Psychiatrie, August, 1901, p. 492.

² Revue Neurologique, April 30, 1901, No. 8, p. 378.

³ Neurologisches Centralblatt, March 1, 1902, No. 5, p. 199.

tion in the distribution of the facial nerve from striking over this nerve) was not present, and the spasms were not bilaterally symmetrical, and occasionally the fingers were in extensor contraction, and the thighs were as much implicated as the feet; so that there were many features unlike those of tetany. The importance of the case lies in the fact that it seems to demonstrate that lead is capable in rare cases of producing contractions in the muscles of the extremities.

Writer's Cramp. Two cases of associated movements with writer's cramp, reported by Haskovec,¹ may be employed by those who believe that this cramp is the result of cortical disturbance. In one case the attempt to write with the left hand caused a spasm of the right hand, so that the right hand assumed the customary position for holding a pen, and involuntary movement of the right upper limb began when the patient used the left hand for writing. In the other case similar but less prominent phenomena occurred under similar conditions. These movements would seem to indicate that impulses passing from the brain to the left hand "overflowed" to the nerve tracts for the right hand.

Graves' Disease. Von Gräfe's sign is often found in Graves' disease, and perhaps in the minds of some an importance is given to the sign which it does not deserve. Some may regard the sign as almost pathognomonic of Graves' disease, and therefore the observations of G. Flatau,² in Oppenheim's clinic, are valuable as showing the frequency with which von Gräfe's sign occurs in other conditions than Graves' disease and even in healthy persons. The sign consists in incoordination of the movements of the upper eyelid and eyeball when the latter is turned slowly downward, so that the sclera is seen above the iris. Flatau has found that this sign is not infrequently wanting in pronounced cases of Graves' disease, and may be present in bulbar paralysis, brain tumor, neurasthenia, hysteria, Thomsen's disease, etc., and he was himself able to produce it voluntarily. Flatau is not the first to note the existence of von Gräfe's sign in other conditions than Graves' disease, and refers to numerous other observers who have written on this subject. The explanations offered for the phenomenon are so purely theoretical that it is hardly worth while to repeat them.

DISEASES OF THE MUSCLES.

Muscular Dystrophy. In a paper on muscular dystrophy by B. Sachs and Harlow Brooks³ changes in the posterior ganglia are described

¹ *Revue Neurologique*, January 15, 1902, No. 1, p. 67.

² *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xvii., Nos. 1 and 2, p. 109.

³ *American Journal of the Medical Sciences*, July, 1901, p. 54.

which are regarded by these authors as of great significance. The lesions consisted in a shrinkage of the ganglion cells, in many cases similar to that produced by fixing agents, but the spaces enclosing the shrunken cells were found filled with proliferating capsular cells. There was also some chromatolysis. The fact that so few of the cells of the posterior ganglia were involved, while the muscular atrophy was general, was supposed to indicate that these cellular lesions were not primary, and they were regarded as resulting from disease of the muscles. Sachs and Brooks urge that in every case of progressive muscular dystrophy the possibility of great improvement by systematic exercise should be kept in mind at the start, and they believe there is little doubt that if earnest efforts in this direction are made at an early period, better results may be obtained than has fallen to the lot of these unfortunate patients hitherto.

Pierre Marie¹ has observed some peculiar manifestations of muscular dystrophy. In one of his patients closure of the eyelids was impaired, as in the infantile form of this disease, but very marked double ptosis existed—a condition which was very different from the widely opened eyes of the infantile form. The lips were not very large, neither was the tapir mouth seen, but the muscles of mastication were greatly affected. Bilateral ptosis and implication of the muscles of mastication made this case a very striking one, and yet Marie has found a few cases reported in which either ptosis or implication of the muscles of mastication occurred alone in muscular dystrophy, but no case in which both occurred together. It remains to be seen whether the type he describes is to be regarded as distinct or merely a modification of the Landouzy-Dejerine form.

In a case of muscular dystrophy observed by E. Long² the atrophy began, when the patient was about fifteen years of age, in the muscles of the back of the neck, posterior part of the trunk, and pelvic region. The disease was slowly progressive and implicated the upper and lower limbs, the atrophy first appearing in the portions near the trunk, and being more pronounced in the lower limbs than in the upper. The face was normal. The sternocleidomastoid and the abdominal muscles were wasted. Fibrillary tremors were not seen. Electrical reactions were diminished, but not qualitatively altered. Sensation was preserved. The tendon reflexes were diminished or abolished. The diagnosis of muscular dystrophy seems to have been correct on account of the slow progress of the disease, the parts of the limbs implicated early, the condition of the electrical reactions, and the absence of fibrillary

¹ *Revue Neurologique*, 1901, No. 9, p. 446.

² *Nouvelle Iconographie de la Salpêtrière*, January and February, 1902.

tremors. Peculiar to this case, however, was the commencement of the atrophy in the muscles of the back. On account of this atrophy the impotence was great. Long does not attempt to make a distinct type of this form of muscular dystrophy, and wisely, because variations are found in every disease, and we gain very little—probably we lose much—by unimportant distinctions. The classification by Erb of all forms of muscular atrophy not implicating the nervous system under the name of progressive muscular dystrophy has done much to simplify this disease.

CONTRACTURE IN MUSCULAR DYSTROPHY. Contracture of the limbs is known to occur in muscular dystrophy, and the cause has been supposed by many to be the contraction of fibrous tissue that has replaced the muscles. This explanation will not answer for those cases in which the contracture occurs among the first signs of disease, as in two cases observed by Friedrich Hahn,¹ in which the first sign of progressive muscular dystrophy observed by the parents of the children was contracture at the ankles, so that the children walked upon the toes. Contracture of muscles is not confined to any one form of muscular dystrophy, although some have thought that it is more likely to occur in the Landouzy-Dejerine type—a view that probably is incorrect. Contracture of the ankles as one of the initial signs of muscular dystrophy is not common, and seems to have been reported only three times, according to Hahn, in addition to his own cases. He explains it as the result of overaction of the hypertrophied calf muscles, with, later, partial weakness of the antagonistic muscles. Although implication of the bones has been observed repeatedly in muscular dystrophy, it does not seem to be related to the early contracture. It is very questionable whether one would be justified in predicting the development of muscular dystrophy when contracture at the ankle is the only prominent sign of the disease; nevertheless, it should be remembered that in five recorded cases such a prediction could have been made. As hyperextension of the big toe may be one of the earliest signs of Friedreich's disease, so early contracture at the ankles may be of equal diagnostic importance in muscular dystrophy.

¹ *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xx., Nos. 3 and 4, p. 137.

OBSTETRICS.

By RICHARD C. NORRIS, A.M., M.D.

PREGNANCY.

Decreasing Fecundity among Americans. The remarkable rapidity of growth of our population is in a surprising measure due to the foreign element and not to the native American woman. This fact has been brought to our notice by a careful and laborious investigation made by Engelmann,¹ who has studied the question and discusses the increase in sterility, the number of miscarriages, and the decrease in the birth-rate which is especially noteworthy in this country.

From statistics he finds a decreasing birth-rate in all European countries. France has the lowest. The United States is about the same, or a little less than France.

In the native-born American the rate is far below that of France, while in the foreign-born the rate is two and one-half times greater. The American statistics are incomplete, having been compiled from reports of six States, but they give a relative result.

While the fecundity of the American-born woman is the lowest of any country, marriage with a foreign male is found to yield a higher fecundity than with an American male. The causes for this are found in our present social conditions, which prevent conception and limit families in various ways. Mothers are far more healthy. Early exhaustion and premature decay are the result to those who resort to methods for the prevention or avoidance of pregnancy. The writer believes that these methods are more potent for the decrease in fecundity than is the progress of gynecic science for the increase.

Maternal Impressions. Bankstone² says the scientific feature of the cell element of life is often overlooked. It is endowed with individual and mixed properties of the physical, mental, motor, and sensory elements of either or both parents, and only needs the mother's blood to properly develop it. The blood is capable of carrying impressions to the foetus just as the mother's milk is, under psychic disturbance, capable of affecting the infant. Again, the amount and quality of the

¹ Philadelphia Medical Journal, January 18, 1902.

² Alabama Medical Journal, September, 1901.

mother's blood often affect foetal development. Prenatal psychic conditions, commonly called "maternal impression," do exist, and are not the results of superstitions handed down through several generations, as is argued by some writers. It is admitted by some that the individual mind is capable of auto-psychic impressions. Why should not the same law be applied to the uterus and foetal life? For certainly, from a biological standpoint, the parent cell contains every element of life and function. When the ovum ruptures and has passed into the tube it contains the elements of growth and perfection; following that, if fertilized by the spermatozoon, it forms a combination of cell units equivalent to the functions of the parents. The maternal nourishment carries not only nutrition to the impregnated ovum, but also psychic impressions, such as grief, anger, fright, etc.

These impressions will alter nutrition in the ovum, which, at times, will result in structural changes. That such exists is shown by many instances, despite the absence of an inter-communicating nervous system.

The writer, in conclusion, says that direct nerve communication between foetus and mother is not necessary, that maternal impressions can be carried through the blood. That psychic forces admittedly do exist, and that they are important factors in the formation and development of the child.

The Placenta. THE FUNCTIONS OF THE PLACENTA. Many interesting and valuable studies of the placenta in recent years have increased the importance of this organ. Anatomical and pathological investigations have raised the physiological dignity of the placenta. An editorial in the *British Medical Journal*, April 19, 1902, reviews much of the recent work done, and I shall quote that freely to show that the placenta is now recognized as among the important organs of the body.

In this respect it bears some resemblance to the thyroid gland, once little or nothing accounted of, now regarded as the cause of so many diseases, and the cure for so many more. For long the placenta was looked upon merely as the medium through which nutritive materials and oxygen passed from the mother to the foetus, and effete particles and carbonic acid from the foetus to the mother; it was considered simply to be a fine sieve, through which percolation took place, or a diffusion membrane obeying the laws and regulations of osmosis. Now there is a tendency to regard the after-birth as physiologically capable of performing the most intricate vital processes, and to see in the epithelial covering of its villi a highly differentiated tissue with almost miraculous powers of selection, elaboration, and digestion. The truth doubtless lies, as it so often does, somewhere between these two

extremes. It would seem to be almost certain that the placenta has the property of selection, for it has been found that there is more glucose in the maternal than in the foetal blood; this fact may be held to prove that even eminently soluble substances do not pass from mother to foetus or foetus to mother by the simple laws of osmosis.

There is no evidence to suggest that red blood corpuscles can pass through the placenta either in the matrifugal or in the matripetal stream, but there is some reason to suppose that leucocytes can do so, for the blood of the umbilical vein has been observed to contain an average excess of 4000 leucocytes per c.mm. over that of the umbilical arteries.¹ Further, while eosinophilic leucocytes have been met with both in the vein and the arteries, and while the blood of both gives the iodophilic reaction, this reaction is more marked in the blood of the vein, and the leucocytes which contain iodophilic granules are more numerous in it. It would appear, therefore, that not only is there a migration of white corpuscles from the maternal to the foetal blood, but also that these cells are retained in the foetal tissues and carry with them certain substances having a certain importance as yet undefined. Few analyses of the placenta have been made, but from these few^{2 3} it appears that it has a neutral reaction, and that it contains a large amount of water (nearly 84 per cent.), standing in this particular midway between renal tissue, with 82.7 per cent. of water, and the gray matter of the cerebral cortex, with 85.8 per cent. Further, of the matters removed by extraction, most are albuminous in their nature, and only a small part is true extractive. It is not clear whether these albuminous substances come from the mother or are formed in the placenta itself. As to the ashes of the after-birth, there is a large amount of phosphorus, an excess of soda over potash, and a large amount of lime. It would seem that most of the phosphorus-containing matters are easily extractible with water. Experiments have been made with sterilized infusions of the placenta, from which it would appear that the organ is non-toxic in the ordinary sense of the word. These experiments, however, have been very few in number. Some evidence^{4 5} of an indecisive kind has of late been brought forward to show that the placenta has an internal secretion which passes to the maternal organism. In or on the epithelium covering the villi, clear droplets have been recognized, and have been regarded as the placental secretion on its way through the efferent vessels to the circulation of

¹ Varaldo. *Arch. di Ostet. ed. Gynec.*, 1900, vii, 723.

² Grandis, V. *Arch. Ital. di Biol.*, 1900, xxiii., 429, 439.

³ Sfameni, P. *Ann. di Ostet.*, 1899, xxi., 851; 1900, xxii., 1007.

⁴ Nattau-Tarrier. *Compt.-rend. Soc. de Biol.*, 1900, lii., 1111.

⁵ Lettulle. *Ibid.*, 1901, liii., 5.

the mother. The droplets have been considered to be albuminoid in nature. It is, of course, quite conceivable that they simply represent dead epithelium from the surface of the villi. There is also some evidence that the placenta has a power of storing up in its substance mineral poisons, and, perhaps, toxins and microbes, and so of saving the fœtus from their malific influence. In this respect it would seem to resemble the liver in the adult. Whether or not this be the manner of its action, there can be no doubt that the placenta is a protective agency in antenatal life. Why it sometimes succeeds and sometimes fails to protect the fœtus remains an enigma yet to be solved, for the easy explanation that it becomes permeable by microbes and toxins when its own tissues are diseased, and when, more especially, there are hemorrhages into its substance, is insufficient. At present we do not know the laws that regulate placental permeability, but we know that there are laws. A most interesting side of the placental activities is that concerned with the nature of the minerals and other substances which pass through it at the different months of pregnancy. New light has been thrown upon this difficult subject recently by the chemical analyses¹ that have been made of the fœtus at different ages of intra-uterine life. From these it would appear that the transplacental interchanges vary considerably with the epoch of pregnancy. For instance, the fixation of minerals in the fœtus occurs chiefly in the third trimester of gestation. This is especially true of the iron, and there would appear to be a storing up of that metal in the fœtus during the last three months of antenatal life—a fœtal hypersiderosis which is accompanied by a marked maternal hyposiderosis. In the first half of pregnancy there is a great predominance of the soda over the potash, but in the last weeks the potash evidently passes over in abundance, for in the full-term fœtus the two elements are present in nearly the same amount—a result which is due, no doubt, to the development of red corpuseles and striped muscle. There is little or no increase in the fixation of phosphoric acid in the last months, but there is a great increase in the lime in association with the formation of phosphate of lime; evidently the unborn infant does not assimilate all its phosphate of lime in that form, but fixes first the phosphoric acid, as nuclein or lecithin, and then the lime. There is a very great increase in the amount of fat in the fœtus in the last month of antenatal existence, but whether this substance passes through the placenta or is formed in the fœtus is by no means clear.

It is evident, then, that the substances passing through the placenta differ not only in quantity but also in quality at the different stages

¹ Hugoueneng, L. *Journ. de Physiol. et de Path. Gén.*, 1899, i., 703; 1900, ii., 1509.

of intra-uterine life. It is evident, also, that if the foetus be expelled prematurely from the uterus, as happens, for example, in the induction of premature labor, it comes into extra-uterine life without having experienced all the varied physiological experiences of its intra-uterine existence. The loss of some of these experiences may be compensated by the new influences which cause to play upon the organism in its postnatal environment, but it is difficult to imagine how others can be counterbalanced. For instance, there would appear to be enough potash in human milk to make up for the loss suffered by the infant in leaving the uterus before the great transference of that substance through the placenta took place. On the other hand, the quantity of iron in the milk is quite insufficient to raise that metal to the amount which is stored up in the foetal tissues in the last three months of pregnancy. It would seem then that among the several means that are adopted to keep the prematurely born infant in life and health should be the administration of iron in some easily absorbable form, such as the peptone.

THE SECOND STAGE OF PLACENTAL DEVELOPMENT. Van Tussenbroek¹ reports his studies on placental development. A placenta of early pregnancy was obtained through an operation, and upon this his studies were made. He concludes that the placental development from the primitive to the discoid form is complete at the sixth month; and he also finds the uterine decidua has entirely disappeared at this time from mechanical pressure. The intervillous spaces between the chorion and uterine decidua disappear, obliterating the villi. The placenta grows and expands through the changes in the uterine decidua. When the chorion joins with the decidua of the ovum the placental decidua grows at the same rate as that of the uterine wall. The cotyledons of the placenta are formed by the superficial layer of the placental decidua as it expands under unequal resistance, which is greatest near the bloodvessels. This causes the small vessels to develop in the apex of the villi and results in the arrangement seen in the circulation. The trophoblast can be plainly distinguished from the decidua. Langhan's layer has disappeared, its cells mixing with those of the syncytium.

FŒTAL PLACENTAL CIRCULATION. Schultz,² in experimenting to prove that the blood of the mother does not enter the vessels of the child, took a fresh placenta and spread it with the maternal surface uppermost upon a vessel of warm water. The umbilical vein was dissected out of the cord, a canula was inserted in the end, and through this warm milk was passed into the vein until a high degree of pressure

¹ Zeitschrift f. Geburtshülfe u. Gynäk., 1901, Band xlv., Heft 3.

² Centralblatt f. Gynäk., December 7, 1901.

was attained. The exposed surface of the placenta was then found to be free from milk, although the pressure was so great that blood was seen exuding. The placental surface became erect and took on somewhat of the form it had in the womb. At no time was blood seen upon the maternal surface. The separate cotyledons were observed, but no escape of the milk from the fetal circulation. When one of the cotyledons was cut a stream of milk appeared at once. In this experiment the vein was chosen because it is more widely distributed in the placenta than the arteries, and because its larger lumen permits a freer flow of milk.

Following this demonstration, it is, therefore, understood that when a child perishes through a premature separation of the placenta from its site, that death does not occur from a lack of blood, for the child does not lose blood. It is due to deficient aeration of the blood.

Extra-uterine Pregnancy. THE PATHOLOGY OF TUBAL PREGNANCY. In an editorial review, the *British Medical Journal*, March 15, 1902, discusses the recent works of Couvelaire on "The Morbid Anatomy of Tubal Pregnancy," and of Peterson on "Contributions to the Pathological Anatomy of the Gravid Tube." Couvelaire's entire aim is to demonstrate the anatomy of the fetal appendages and the relation of these products of conception to the tissues of the Fallopian tube. He rejects the theory that a previous pathological change in the tubal mucosa is a necessary condition in tubal pregnancy. The "desquamative salpingitis" of Tait is, he thinks, imaginary as far as ectopic gestation is concerned. In this connection, it is observed that Peterson has traced a close connection between tubal gestation and previous salpingitis. Couvelaire says the changes in the tubal mucosa he detects are due to physical reaction caused by the presence of the ovum. In this he supports Clarence Webster, who first demonstrated that the ovum gone astray sets up or is associated with "decidual reaction" in the tube, just as the ovum in its right place sets up a similar reaction in the mucous membrane of the uterus. Couvelaire failed to detect such a change in the non-gravid tube in any instance, although Webster claims to have demonstrated such a change. He further insists that comparisons must not be forced between the uniform and well-distributed decidua vera of the pregnant uterus and the localized and irregular modification of the gravid tube around the ovum. He has not found that these modifications are ever preliminary to the abnormal gestation.

There is no reason to believe, says Couvelaire, that the stimulus of impregnation first sets up a decidual reaction, which, when it extends, as an abnormal condition to the tubal mucosa, arrests the ovum, and thus causes the pregnancy to develop in the tube. On the contrary, in

the cases which he examined where the pregnancy was very early, the changes in the mucosa around the ovum were very trifling, while in the specimens where gestation was more advanced, the muscular coat, as well as the mucous membrane, was involved in essential modifications. Even then these changes were all but limited to the tubal tissues adjacent to the ovum.

These researches now show it is easy to understand certain after-histories of tubal gestation which until recently were held as gross misinterpretations. A tube which casts an ovum may clearly recover, and it is not necessarily so damaged as to prevent it becoming once more the seat of a foetal sac. Concerning the development of the free pole of the ovum, the part which projects into the tube, he finds no proof that it is invested with a true decidua reflexa; its tissues seem of purely foetal origin. He has detected portions of the tubal plicæ adherent to the free pole of the ovum, but he noted after careful inspection that as pregnancy advances, these portions of the maternal tissues are dragged upon until they become mere threads with degenerated epithelium. There is no imbedding of the ovum and closing in over it of a mucosa, which plays an active share in developing the appendages of the ovum; on the contrary, the ovum tends to free itself from the maternal tissue as pregnancy advances. It can be shown that the changes in the tubal tissues, though very incompetent as imitations of uterine decidua, developed for the benefit of the foetus, are essentially liable to cause those well-known accidents so prejudicial to the mother.

The muscular as well as the mucous coats of the tube undergo changes which weaken the tubal wall, but interstitial hemorrhages also occur in the same region, and these either increase the weakness of the wall or are the direct cause of rupture. The chief interest of Peterson's paper is the evidence which he brings forward in support of the older view that inflammatory changes are predisposing causes, even if not the usual and immediate cause of tubal gestation. Unfortunately, he has given no illustrations, but on the other hand he has brought forward histological and clinical evidence in favor of his theory. The traces of salpingitis common around the foetal sac are not, he insists, the result of its development. The long pause often noted in clinical reports between the last normal pregnancy and the tubal pregnancy favors the salpingitis theory. Pelvic inflammation of uterine not tubal origin explains the interval of sterility, during which space of time the tubes become involved. Bilateral salpingitis seems the rule in tubal pregnancy, according to this author's researches, though he does not imply that the advanced forms, pyosalpinx or hydrosalpinx, are necessarily present in the non-gravid tube. In the gravid tube he finds inflammatory changes clearly older than the gestation itself.

The fungation of the mucosa, familiar in chronic salpingitis promotes the imbedding of the ovum. Perhaps the most important statement he makes is the declaration that he has detected distinct and extensive "decidual reaction" in the gravid and in the opposite tube, and the decidual elements are to be seen not only where the mucous membrane is normal, but also where it is the seat of a slight catarrhal inflammation. Peterson decides that the decidual changes in the tubal mucosa beyond the immediate seat of the attachment of the ovum develop relatively late, about the second month. In so far he agrees with Couvelaire as to the very limited decidual reaction in early tubal gestation.

Formation of Decidua in the Fallopian Tube in Tubal and Intra-uterine Pregnancy. Lange¹ gives his results in his investigations of specimens of 20 cases. He notes that just as the decidua forms in a gravid uterus, so there is a formation of a decidual membrane in a gravid tube, to a less extent, however, and with more variations in its structure. In most cases of tubal pregnancy decidua forms in the uterus.

Considering those cases which have been reported showing that in tubal pregnancy a decidua is formed in the non-pregnant tube and in the womb, most adjacent to it, after an examination of 5 cases, he concluded that the mucous membrane of the Fallopian tube, like that of the womb has the property of forming a decidua. To produce this result, the impregnated ovum must be in contact with the mucous membrane, and must attach itself to the tube or the womb. The power of the mucous membrane of the tube for forming a decidual membrane is much less than that of the uterine mucous membrane. In the early months one finds very little if any decidual membrane in a tubal pregnancy. In most cases the merest traces of a decidual membrane are found; there are exceptional cases, however, in which the ovum has caused irritation about its attachment, with decidual formation.

Expectant Treatment of Extra-uterine Pregnancy. The results of surgical treatment of extra-uterine pregnancy have been so satisfactory that one is surprised to read of a series of cases treated conservatively. It is interesting to note that the mortality was about the same in the series of cases about to be related. The cases not operated upon were, of course, those in which the initial hemorrhage ceased spontaneously and efforts were made to promote absorption of the blood tumor formed. The results show very clearly the desirability of surgical interference and should leave no one in doubt as to the best plan

¹ Monatschrift f. Geburtshülfe u. Gynäk., 1902, vol. xv., No. 1.

of treating these cases. An old hæmatocele is often cured by vaginal incision and free drainage. Abdominal section, however, is usually the appropriate treatment for early cases.

Ihm¹ reports a series of 44 cases and details the results of his cases, and compares the expectant and operative modes of treatment in the hands of several operators. Of his cases he deducts 5 which were particularly beyond treatment when first seen by him. This leaves 39 cases; of these 19 were treated by operation, 17 by abdominal section, and 2 by vaginal section. Twenty were treated by the expectant plan. One patient died the day following the opening of a large suppurating hæmatocele through the vagina by the thermocautery; this was the only death from operative procedure. Ihm reports the statistics of twelve operators; their mortality varied from nothing to 25 per cent. The largest series by von Schenck comprised 436 cases, with a mortality of 16.5 per cent. Winter had a series of 17 cases without a death. Of the writer's 17 cases of abdominal section he was able subsequently to investigate 15. Six wrote and 4 reported that they were well and able to work, 1 had had two children following the operation, and 2 had slight pains on exertion, but menstruation had been normal. Of 9 examined personally, 5 reported having had no pains after leaving the hospital; 1 had pain in the left side on exertion; 1 had pain previous to menstruation; 1 had pain following menstruation; and 1 had pain in the back and right side. In some cases adhesions were found, which limited the mobility of the pelvic organs, others had thickened tubes and sensitive ovaries, 1 had a retroflexion with a parametritis on the left side; 1 had a tumor, the size of a hen's egg, behind the uterus, with adhesions.

Of the 20 cases treated without operation, 13 had hæmatocele behind the uterus, and 7 had hæmatocele surrounding a tube. All were examined under an anæsthetic, and in 12 cases decidua escaped from the uterus.

The non-operative treatment consisted of rest in bed, abdominal applications, attention to the bowels and the use of stypticin. When danger of hemorrhage had passed, salt baths were given to increase absorption, and tampons of the iodides of glycerin or ichthyol and glycerin were used.

The shortest stay in the hospital of these patients was nine days, the longest nine weeks. Eleven of these patients have since reported, 8 were examined, and 3 reported by letter; 1 wrote she was not as well as before, had much menstrual pain, and could not do hard work; 1 had irregular pains; 1 stated that six months after discharge she had

¹ Zeitschrift f. Geburtshülfe u. Gynäk, 1901, Band xlv., Heft 2.

severe abdominal pain on exertion and could not do hard work. The 8 cases examined revealed only a partial absorption of the hæmatocele and changes resulting from peritoneal inflammation about the pelvic organs. Six weeks at least is required with the non-operative treatment to absorb the blood ; and the writer found that by making allowance for all other causes of ill-health these patients suffered from five to seven months after leaving the hospital.

The operative cases were able to work four weeks after leaving the hospital. The expectant treatment had no mortality. Comparing the two methods of treatment it is seen that the results from both are good, but there is a great difference in the time required.

The average death-rate the writer computes from the statistics of several operators to be 1.50 per cent. in the operative treatment. Thorn believes the non-operative treatment has a mortality of 1 per cent., and so as far as results are concerned they are practically the same.

Ovarian Pregnancy. Condanin¹ reports a very interesting case that had shortly before been under his care. The patient was married at eighteen, and six months later had a miscarriage. In November, 1893, she ceased menstruating and was believed to be pregnant. During the succeeding six months the diagnosis was confirmed by the appearance of the usual signs of pregnancy. In July she had sacral and abdominal pains, which lasted for four days, and milk appeared in her breasts at the same time. Two months after this, in September, the menstrual function was re-established. She thought that for several years succeeding this history she had gradually decreased in size. In November, 1901, she had an attack of renal colic. Upon examination a hard tumor was found in the right side. It extended up from the pelvis to a point above the umbilicus ; the uterus and cervix were displaced to the left. Upon operation a large white cyst was found, which was slightly adherent to the appendix and intestines. The pedicle was of ordinary size and originated behind the right broad ligament. The uterus and both Fallopian tubes were displaced, but were normal in appearance. The left ovary was somewhat enlarged, but in good condition ; no trace of a right ovary could be found after the cyst had been removed. The cyst walls were white and in places pearly in color. The fœtus was well developed, and the ovary was implanted at the point of entrance of the ovarian veins. The cyst structure was not examined at once histologically. Some time later, when it had been passed through Müller's fluid, it looked and felt like the structure of certain ovarian cysts. The changes which had taken

¹ *Lyon Médicale*, March 2, 1902.

place during the eight years would probably have obliterated all traces of the original ovarian tissue. Nevertheless, the fact that ovarian tissue was not demonstrated in the cyst wall is the one missing link in the complete chain which would undeniably prove the origin.

Extra-uterine Placenta Implanted on the Liver. Tuholske¹ reports a case of secondary abdominal pregnancy of unusual interest. The patient, aged thirty-nine years, was of light weight and small stature; she had previously borne six children. Tuholske saw her first May 10, 1900. Her last period had ceased January 6th. Violent pain and collapse had occurred in March; this was followed by impaired health, and a free mucopurulent discharge from the cervix. No pelvic enlargement could be detected, but there was a growth in the upper abdomen continuous with the liver. In the right lumbar region, midway between the last rib and the crest of the ilium was a protuberance, well marked and simulating a renal growth. A bruit was heard, and a few days later foetal movements were also detected. An abdominal incision was made May 16; the pelvic viscera appeared normal and without any sign of rupture. In handling the liver, which was much engorged with venous blood, it was bruised by a retractor and bled freely. It was tamponed by placing a large piece of gauze between the parietes in front and the point of bleeding behind. On the under surface of the right lobe of the liver and above the transverse fissure was a convex protuberance of circular shape, pulsating and containing many large veins and arteries. No foetus was seen, and without further search the cavity was closed, leaving the gauze tampon in place.

It was thought by some of his assistants that there was a cavernous angioma of the liver and no pregnancy. The patient recovered from the operation, but remained in poor health. Shortly afterward foetal movements and heart sounds were plainly detected. As she progressed toward term dyspnoea became marked and severe, and she expected a normal delivery. Tuholske made a lumbar nephrectomy incision, and extracted a living female child weighing six and one-half pounds. The large sac was firmly tamponed, the peritoneal cavity remaining unopened on account of adhesions. She was dressed twenty-four hours later, and on removing the dressings and illuminating the cavity the placenta swelled up like an artificially inflated lung. The tampon was reapplied. The patient died thirty-two hours after the removal of the child. The placenta was found to be implanted on the parietal peritoneum of the diaphragm as far forward as the attachment of the coronary ligament on the liver, from its upper border to the transverse fissure, posteriorly

¹ American Gynecological and Obstetrical Journal, December, 1901.

on the diaphragm and also on the upper border of the kidney. The primary placental seat was found histologically to have been about one-third inch above the orifice of the right Fallopian tube. The uterus was large and soft, the left tube and ovary were inflamed, and the right ovary contained a well-defined corpus luteum. The liver and kidney were the only viscera to which the sac was attached, the intestines being free and normal.

Combined Extra-uterine and Intra-uterine Pregnancy. The last case referred to suggests a similarity to the following reported by Perkins,¹ in which an extra-uterine and intra-uterine pregnancy occurred together. The patient had missed her previous menstruation. Three weeks after that she was suddenly taken with sharp, cramp-like pains, low down in the right side. Her pulse was good, there was no evidence of shock, syncope, or nausea. The pain gradually ceased until three days afterward she had none. There was, however, a sensation of fulness and pressure in the region of the former pain. Her temperature was 100.6° F.; pulse, 110; bowels and kidneys both normal. Upon examination at this time dulness and slight tenderness were elicited just below McBurney's point. The uterus was in normal position and slightly enlarged. It was fairly movable, and to the right side a boggy, sensitive mass was felt, extending from the uterus to the pelvic brim. The left adnexæ were normal. The uterus was evidently pregnant, but aside from the fact that the patient had been sterile for several years in association with sudden cramp-like pain, there were no other classical symptoms of an extra-uterine pregnancy. There had been no bloody vaginal discharge, nor any decidual membrane. The character of the pain, its onset, the peculiar feeling in the vault and the dulness on percussion suggested hæmatocele. On opening the abdomen in the median line blood clots and about twenty ounces of blood escaped. After breaking up some adhesions the bleeding point was found in the right tube close to the uterus. The tube was enlarged at that point, and taking great care not to disturb the uterine pregnancy, ligated and removed.

The patient did well for several days, but five days after the operation she developed uterine pains and a bloody vaginal discharge. The fœtus could not be saved, and the womb was dilated and curetted, and the remains of a two months' pregnancy removed.

E. Gustav Zinke² reports a case of ectopic gestation complicating normal pregnancy, in which a cœliotomy was done and recovery followed, the uterine pregnancy going to term. The patient gave the

¹ Boston Medical and Surgical Journal, March 20, 1902.

² American Journal of Obstetrics, May, 1902.

following history : Menstruation ceased March 25, 1899. April 17th she felt extreme lassitude and weakness ; spent most of her time lying down. April 22d she was suddenly taken ill with fever, violent headache, cramps in the knees, severe pains in the bowels, and excessive nausea, vomiting, and dysenteric evacuations at hourly intervals. Her physician diagnosed catarrhal dysentery. She was obliged to remain in bed three weeks, during which time the nausea and vomiting were both very bad. May 21st to 28th she was able to be up and around, though vomiting continued. Pain in the bowels continued paroxysmally and the accumulation of gas within them caused extreme suffering. May 29th, at 8 A.M., she had sudden violent lancinating pain in the right inguinal region, accompanied by unusually severe attacks of vomiting. At 7 P.M. another similar attack occurred. A thorough physical examination by her physician at this time revealed nothing but a tender pregnant uterus. She had another attack of pain May 30th, and from that time improved slowly for three weeks. She then had pain in her right side, which was worse upon standing. June 14th her physician again examined her and nothing more than a tender pregnant uterus could be elicited. June 21st she was so much better she ventured "down town." She became worse on her return and the pains gradually grew paroxysmal and worse. Her physician having gone to Europe a few days before, she consulted Dr. Zinke, who, upon bimanual examination, elicited the following : A pregnant uterus partly pushed to the left by a firm and tender mass, the size of a large hen's egg, apparently in the right broad ligament. An inflamed ovarian dermoid was suspected. Immediate extirpation of the "growth" was advised. This was done July 7th, under chloroform anæsthesia. A median incision was made from symphysis to umbilicus. Separating the adhesions between the uterus, omentum, abdominal wall and the growth, blood coagula were seen under the omentum, and then, but not before, ectopic gestation suggested itself. The adhesions having been broken up and the blood clot removed, the pedicle was seen to the right broad ligament and Fallopian tube. The pedicle was tied close to the uterus and the oozing stopped by pressure with aseptic gauze pads. Catgut sterilized with ether and kept in alcohol was used for ligatures and sutures. The recovery was prompt and uneventful. Microscopic sections made from the tumor mass revealed placental villi and foetal structures. The writer believes ectopic gestation began in this case simultaneously with the intra-uterine, because (a) there was no indication of a corpus luteum of pregnancy upon the left ovary ; (b) the right ovary constituted part of the gestation sac and was so destroyed that no corpus luteum could be found ; (c) the ectopic ovum, it is reasonable to assume, came from the right ovary, and as there was

not the slightest evidence of a corpus luteum upon the other, the intra-uterine too must have come from the right ovary.

The rupture of the ectopic sac probably occurred April 12th, just twenty-eight days after her last menstruation. It is more than likely that the ovum continued to grow for a short time after that. Judging from the microscopic section the death of the ovum occurred about the thirty-sixth day of pregnancy, or one week after the first symptoms of rupture, and was caused by hemorrhage around and perhaps into the ovum.

The writer submits a tabulated report of 88 similar cases and summarizes his conclusions as follows :

The *diagnosis* is exceedingly difficult and has rarely been made, notwithstanding the symptoms of ectopic gestation, it is the last condition believed to be possible when the uterus contains an ovum.

Frequency. It is perhaps the least frequent complication to which a pregnant woman is exposed. It may arise in primipara as well as multipara, more frequently in the latter, and at any time in the procreative period.

Causes. Not exactly known ; purely speculative in primipara.

Duration. Very variable. Generally both pregnancies are interrupted, the one by abortion or premature labor, the other by rupture of the sac or death of the embryo. In some instances the intra-uterine child was delivered, while the ectopic foetus died and remained for months and even years. There are quite a number of cases in which both ova developed and the children were born alive, one *per via naturales*, the other by coeliotomy.

Prognosis. Grave for mother and both children. Rupture of the extra-uterine sac with internal hemorrhage is the most frequent cause of death.

Treatment is indicated by the course and duration of each case. If the patient goes to term with both foetuses, the ectopic must be delivered by coeliotomy. If dead, the operation may be postponed until the patient is past the puerperium. If there are symptoms of a rupturing extra-uterine gestation sac or any tender swelling interfering with the gradually developing uterus, the offending mass should be promptly removed. There is abundant evidence that the removal of abdominal growths may take place without jeopardizing the patient's life any more than in the non-pregnant state. In the case of abortion of the intra-uterine ovum, the ectopic sac is to be dealt with as if the former had never existed ; it should not be permitted to continue even if viability has been obtained and the child shows vigorous life. In rupture of an extra-uterine sac with symptoms of hemorrhage, prompt extirpation should be performed.

Pernicious Vomiting of Pregnancy. The etiology of the aggravated and pernicious forms of the vomiting of pregnancy is often obscure, and although an hysterical element can be discovered in some cases, the toxic element usually predominates, and the sooner that fact is realized in treating these cases, their danger will be appreciated. I took occasion in a preceeding volume of *PROGRESSIVE MEDICINE* to discuss this affection at length. It is again referred to in order to emphasize the importance of toxæmia as the predominant etiological factor. Pelvic disturbances such as inflammatory diseases, uterine displacement, or cervical catarrh often are contributing factors, while hysteria in some cases is undoubtedly an important cause. Recently a most alarming case was placed under my care, and a careful study of the case induced me to isolate the patient at once in a private room in a hospital. Within twenty-four hours the vomiting permanently ceased with no other treatment, and did not recur after a rest treatment of two weeks. While every possible contributory cause should be looked for and eliminated by appropriate treatment, the most aggressive inquiry into the functions of the liver, the kidneys, and the circulation should be made, for these will best furnish the evidences of toxæmia.

M. Hugl¹ gives three theories of the causation of vomiting in pregnancy: (1) Nervous disorder; (2) reflex, originating in the genital organs; (3) intoxication. The persistent vomiting is not a morbid entity but an exaggeration of the milder form, and he considers it to be due to intoxication. The cause is to be sought in disorders of the liver, kidneys, stomach, and intestines, produced by the added work of pregnancy. Treatment should consider the nervous and gastric conditions and systemic intoxication. By careful diet and appropriate remedies the gastric digestion and cardiac erethism must be controlled; antisepsis of the alimentary tract is an important indication. The urine should be closely watched, albuminuria or a diminished percentage of urea at once suggests a milk diet.

Rectal alimentation may correct in part errors in digestion and absorption incident to mouth feeding. Evacuation of the uterus is the last resort.

De Ribes² records the autopsy on a fatal case, the findings showing quite clearly the evidences of toxæmia similar to those discovered in a fatal case of eclampsia.

The patient was thirty-one years of age, a IV-para, and pregnant at about six months. She had become much emaciated and reduced by constant vomiting. Various means were tried to control the vomit-

¹ La Presse Médicale, October 9, 1901.

² Compt.-rend. de la Soc. d'Obstet. de Paris, 1901, vol. iii.

ing, without avail, and a careful examination failed to reveal the source. She was finally delivered spontaneously, but grew steadily worse, and presented a typhoid appearance, with sordes upon the teeth, and a red, dry tongue. Vomiting ceased after the uterus was emptied, but the urine contained a large amount of albumin.

An intermittent delirium followed, passing into coma, and death followed in convulsions.

The autopsy revealed no lesions of the brain, heart, or lungs. Both kidneys, however, were the seat of an active secondary nephritis. The liver was the seat of most marked alterations. Its appearance was blanched with small yellow areas over its surface, and upon the lower portion there was a large infarct, which had replaced necrotic parenchymatous tissues. There were multiple hemorrhages and lesions resembling those often seen in eclampsia. The lesions were those of an active hepatic toxæmia.

Coudamin¹ states his belief that this form of vomiting is due to an intoxication, and that the proper treatment consists in relieving the patient of the accumulated toxins. He has been very successful in his treatment of this class of cases during recent years. His method of treatment consists in withholding all food by the stomach for certain periods, varying from seven to ten days, according to the severity of the case; and in giving artificial serum per rectum.

Many obstinate cases have yielded to this treatment. The following serves to illustrate his method: A young woman who had suffered from the vomiting of pregnancy for three weeks, and upon whom everything in the way of drugs had been tried without relief, had been sent to the hospital for the induction of abortion. The patient was extremely ill and unable to stand without assistance. Her condition was considered too serious for interference, and artificial serum was ordered injected into the rectum; a litre, three to four times a day. The second day after beginning the treatment the patient became brighter and there was a great increase in the quantity of urine. The treatment was continued until the eleventh day, when fluid nourishment was given by mouth, with perfect results. The rectal injections rarely caused any irritation in these cases. If any developed the addition of a few drops of laudanum was sufficient to quiet it.

In some cases the attempt was made to give milk by the mouth after four or five days of the treatment, but it was found that it could not be borne so soon, and that on an average it took about eight days for the stomach to recover its normal condition. If the injections cannot be retained in the rectum they may be given subcutaneously. One

¹ Lyon Médicale, February 2, 1902.

drawback to this is that the same large amounts cannot be given at such short intervals. This method the author claims is applicable to any case of vomiting of pregnancy, and in his hands has failed of success in only one case, which at the autopsy revealed a severe acute cerebral œdema. The treatment, the author claims, allays the troublesome epigastric and pyloric spasm, and at the same time controls and quiets the vomiting.

An important fact always to be borne in mind in treating grave cases of vomiting is to study the case critically in order to terminate the pregnancy before it is too late to save the patient. A blood examination which shows marked evidence of starvation; an analysis of the urine that points to a serious toxic lesion of the kidneys; evidence that the liver is incapable of performing the function demanded of it; a nervous system staggering under a profound toxic influence; degenerative changes in the bloodvessel walls, as shown by repeated gastric hemorrhages; a cardiac sound presenting the loss of muscular element; a pulse like that in typhoid fever and marked elevation of or persistent subnormal temperature form a complexus of symptoms which should not be permitted to occur, as the induction of abortion will come too late to save the patient's life.

These grave cases, fortunately, are relatively rare, otherwise the disapproval of terminating pregnancy that at times finds a place in the literature would not be observed.

Hysterical Contraction of the Gravid Uterus. Guillermin¹ reports such a case in a primipara who was pregnant about four months. She was much frightened and shocked at this period, and severe abdominal pains with tonic contractions of the uterus resulted. On palpation during these contractions the uterus felt like wood, and the slightest touch gave intense pain. The cervix was normal, and there was no vaginal discharge. A diagnosis of threatened abortion was made, and treatment given accordingly. The pains persisted for several days when hysteria was suspected and distinct evidences of it were found on closer observation. The usual treatment of bromides and valerian proving of only temporary benefit, hypnotic suggestion was tried. It proved successful the first time tried. The symptoms returned only once, and that was a few days later when she had been influenced by some emotion. The hypnotic suggestion was promptly repeated, and she fully recovered, giving birth to a well-developed male child at term.

Latent Hemorrhage in Pregnancy. Dolères² presents two such cases. One patient was aged thirty-five years, her last pregnancy

¹ *L'Obstétrique*, January 5, 1902.

² *Compt.-rend. de la Soc. d'Obstet. de Gyn. et de Pediat. de Paris*, February, 1902.

being nine years previously. During the early months of this pregnancy she suffered considerably with hypogastric pains, and in the seventh month she had repeated attacks of syncope, which were attributed to a neurosis. The pulse did not rise above 100. It was noticed that the uterus was abnormally tense, and a few days later labor set in. It took place spontaneously, and a dead child weighing five and one-quarter pounds was expelled. The child was macerated, and the cord had scarcely been cut when the placenta was expelled. It was followed by the escape of large quantities of clots and dark liquid, then putrid fluid. The uterus was scraped with two fingers and more clots and blood were removed. It was then doused with a 1 to 1000 carbolic acid solution, and 500 grains of artificial serum were transfused. On the fourth day following the discharge was fetid. The uterus was curetted and again washed out and tamponed with antiseptic gauze. From this time the patient's condition improved and was satisfactory. An examination of the placenta revealed the circular sinus torn completely in two different places. The writer believes it was ruptured through congestion rather than through any traumatic influence.

The second case was extraordinary in many ways and difficult of explanation. The patient, aged thirty-one years, was pregnant for the first time. She was much troubled with constipation during the earlier months of pregnancy and later with marked abdominal distention. So marked was it that hydramnion with twin pregnancy was suspected. In the seventh month of pregnancy an acute attack of pain, with collapse, occurred, there was no fever or vomiting, but the distention was enormous. Labor began then; the following day the membranes were ruptured and 300 grammes of liquor amnii escaped. A dead male child was expelled, when another bag of waters presented. This was ruptured and another dead male child was expelled; each weighed about one pound. The placenta was single, but there were two amniotic cavities. The patient felt somewhat relieved; there was no vomiting, but still much distention; the bowels being so tense that the coils could be seen through the abdominal wall. Some flatus and feces were expelled after appropriate measures had been taken, but with no benefit to the patient, as she grew worse. Upon pelvic examination the uterus was found displaced upward by a large mass bulging into Douglas' cul-de-sac. Several weeks later it had increased in size and extended as high as the umbilicus. A celiotomy showed a large pelvic hæmatocele with omentum and coils of intestine adherent to it. The outer wall of the hæmatocele was formed of a fibrinous material; this enclosed clots and blood in several loculi, which appeared to have been formed at different stages, probably in successive hemorrhages.

Fibrinous material also formed the divisions between the loculi, and altogether they contained about three and one-quarter pints of blood. The blood in one loculus smelt fecal.

The uterus was intact, and there was no evidence of a rupture of the uterine walls or an illegal operation. The left broad ligament and tube seemed to form a bulkier mass than the right. The parts were manipulated as little as possible, and the origin of the successive hemorrhage was not determined. Drainage was established through both the abdominal wound and the vagina. Feces were discharged through both drains, but in one month both closed and the patient made a good recovery. Six months subsequently she was examined and the uterus found retroverted and the displacement corrected. The left appendages were somewhat enlarged, freely movable and painless. The pelvis was free.

Hæmaturia during Pregnancy. Chiaventone¹ reports a case of hæmaturia gravidarum. This condition is very rare if the term be restricted to those cases in which the bleeding is due to the gravid condition of the woman alone, and excluding tuberculosis, renal lithiasis, hæmophilia, and other specific causes. Only seven such cases have been previously recorded. This case was a woman, aged forty-six years, who had had five previous normal pregnancies, one being twins; ten years previously she had had a parenchymatous metritis, which had been treated by curetting and afterward amputation at the neck (?). The hæmaturia appeared at the fifth month of her sixth pregnancy, and she had no objective or subjective symptoms.

Cystoscopy was not practised, but careful minute inspection of the urinary organs revealed nothing abnormal. Beside the blood elements, the urine contained at times long, stringy coagula, the passage of which caused acute pain in the kidney area and along the ureters. There was no albumin, casts, or parasites of any character.

The hæmaturia was never very profuse, and was almost continuous during the latter half of pregnancy. It did not affect the patient's health, nor could it be controlled by the usual hæmostatics and a strict regimen. Eight days after delivery it ceased spontaneously.

Regarding the pathogenesis, the author says that venous stasis in the kidneys and retention of urine due to compression of the large abdominal vessels, and of the ureters by the gravid womb may have some effect, but it is subordinate to that of gastrohepatic insufficiency so common in pregnant women.

Assuming the uselessness of drugs if the hemorrhage were endangering the mother's life, it is possible that one might, after having punc-

¹ *Bullet. d. Assoc. San., Milanese, March, 1901.*

tured the membranes, with the view of lessening the size of the uterus, and thereby having diminished the intra-abdominal pressure, be compelled to terminate the pregnancy.

Valvular Heart Disease in Relation to Pregnancy and Labor.

Webster¹ says that though a good deal has been done of late to point out the special dangers associated with the different cardiac affections, there is at the present time some difference of opinion both in regard to the causes of these dangers and the methods of dealing with them. It is very difficult to estimate accurately the mortality in cases of pregnancy and labor complicated by cardiac disease in which no treatment is carried out. The heaviest death-rate is in cases where pregnancy has occurred while the heart affection is of recent origin ; these cases are not common, and no satisfactory statistics can be given of them ; hence he devotes himself mainly to those cases in which the heart lesion is in a chronic condition. When statistics are analyzed in order to determine the relative frequency and danger of the different varieties of heart lesions, we get the following results (right-sided affections are so rare they are not considered, and our attention is devoted to mitral and aortic disease) :

Mitral Stenosis. In Porak's 92 cases there were 13 of this variety, the mortality being 61.53 per cent. ; in MacDonald's 31 cases 14, the mortality being 64.4 per cent. ; in Remy's 118 cases 19, the mortality being 53.15 per cent. ; in Sear's 30 cases 14, the mortality being 46.6 per cent.

Mitral Regurgitation. In Porak's 92 cases there were 22 of this variety, the mortality being 13.63 per cent. ; in MacDonald's 31 cases 8, the mortality being 50 per cent. ; in Remy's 118 cases 29, the mortality being 20.68 per cent.

Aortic Lesions. In Porak's 92 cases there were 13 with aortic lesions, the mortality being 23.07 per cent. ; in Remy's 118 cases 17, the mortality being 11.76 per cent. ; in Sear's 30 cases 6, the mortality being 16.66 per cent.

Combined Mitral Lesions. In Porak's 92 cases there were 22 of this variety, the mortality being 45.45 per cent. ; in Remy's 118 cases 15, the mortality being 40 per cent.

Complex Lesions (Mitral and Aortic). In Porak's 92 cases there were 22 of this variety, the mortality being 50 per cent. ; in Remy's 118 cases 16, the mortality being 18.75 per cent. ; in Sear's 30 cases 7, the mortality being 57.14 per cent.

As far as we can judge from statistics the most fatal lesion seems to be mitral stenosis. Acute endocarditis is very rarely found in preg-

¹ American Medicine, February, 1902.

nancy, and must be regarded as a more serious disease than it is in the non-pregnant. The great majority of cases are those of chronic valvular disease of the left side of the heart which existed before pregnancy began. The gravest cases are those in which pregnancy occurs before compensation has been well established after recent mitral or aortic disease. Of the cases in which the endocarditis is not recent, compensation having been well established, mitral stenosis is the most serious form of heart lesion. The mitral valve is more frequently affected than the aortic. The effects of pregnancy on a woman who has a valvular lesion depend upon a variety of facts—*i. e.*, the situation and extent of the disease, the degree of compensation existing at the beginning, the general health, habits, and occupation of the patient. The main element of danger common to all cases is, undoubtedly, the work thrown on the heart as a result of the increased quantity of circulating blood. This factor is most serious in the later months of pregnancy when the uterus attains a large size. Other influences are distention of the abdomen, especially if this be abnormal from excessive size of the uterus—*i. e.*, hydramnios, twins, etc., disturbed metabolism, and imperfect elimination.

The woman with heart disease has a shorter life expectation if she bears children, and her dangers increase with succeeding pregnancies. Very few women go to term without the appearance of some abnormal signs and symptoms.

Dyspnoea, palpitation and oedema are most frequent ; while pulmonary congestion and dilatation of the right heart increase the danger. Ascites, albuminuria, hemorrhages, and embolism are also very grave signs. The majority of cases become worse during the last weeks of pregnancy ; moreover, they often become despondent and nervous, lose their appetites and suffer from sleeplessness at this time.

Treatment. Some authorities agree that no woman with organic heart disease should marry, taking her well-being alone into consideration, while others insist upon the restriction only in special cases—*e. g.*, when her health is not good, in mitral stenosis, or where some other bodily lesion exists.

When she becomes pregnant she must be carefully looked after from the beginning. Her daily routine should be regular and well ordered. She must be guarded from strain, worry, anxiety, and sudden shock. Her diet should be very nourishing, easily digested, and the bowels carefully regulated. She should stay out-of-doors as much as possible in fine weather, taking easy walks and carriage drives, and avoid chills and dampness. In the late months she should be kept more at rest, massage of the limbs being frequently beneficial.

Tonics, such as iron, arsenic, or strychnine, are needed in most

instances ; while strophanthus, digitalis, and nitroglycerin are indicated when there are signs of heart failure. When digitalis is given a nitrite should be given at the same time to counteract the effect of the digitalis in contracting the arterioles. Diuretin is valuable in relieving œdema in different tissues.

If abortion is threatened, be guided by the mother's condition, and, if bad, most authorities terminate the pregnancy at once ; if good, an effort should be made to carry on the gestation.

When cardiac weakness develops in pregnancy without threatening abortion, the uterus should be emptied in the majority of cases when the severe signs arise—*e. g.*, increasing dilatation and irregularity of the heart, pulmonary œdema and congestion, ascites, albuminuria, etc. In all cases in which rapid benefit is desired, bleeding stands prominent as a therapeutic measure. Terminating pregnancy may be as dangerous as a full-time labor, especially when the signs of cardiac failure are marked. When labor sets in the patient should be carefully watched. If the patient has previously been in good condition, an occasional dose of a stimulant may be given if necessary. On the other hand, if signs of heart failure appear and she becomes very nervous and strains, and it is impossible to quiet her otherwise, chloroform should be administered and the cervix dilated. In the second stage, in bad cases of mitral disease especially, the patient should not be allowed to pass through it in her own strength, but forceps should be applied.

Occasional injections of ether may be needed, but the writer especially recommends nitrite of amyl. The drug may be given in small capsules containing between 4 and 5 minims, broken and held under the nose. It is useful in opposing chloroform syncope, and as the child is delivered is of great value in neutralizing the increasing strain on the heart due to the additional blood thrown out of the uterine circulation by uterine contraction.

Nitroglycerin hypodermically may be used instead of nitrite of amyl. The third stage is most to be feared. The placenta should not be allowed to separate naturally, but should be separated by passing one hand into the uterus and separating it slowly, keeping the other hand on the abdomen pressed against the uterus. Skill, coolness, and judgment are required, and the amount of blood lost should be carefully watched. As the uterus retracts after the removal of the placenta, the heart should be watched and nitrite of amyl given if necessary.

If, owing to the amount of chloroform and nitrite of amyl given the uterus does not promptly contract, no alarm should be felt, as this is better than sudden retraction, because the circulatory changes are more gradually brought about. Ergot or hot-water douches should not be

employed except where there is danger of loss of too much blood, for a certain amount of loss of blood is to be encouraged.

Bleeding from the neck, arm, etc., is altogether unnecessary when we have this easy method at our disposal.

Treatment through the puerperium is of the greatest importance. Rest in bed for some weeks is necessary. Stimulants of ether and brandy may be required, while *strophanthus* or *digitalis* may be given cautiously. The most easily digested and nourishing food should be given. The bowels should be regulated and no straining at stool or in micturating allowed. The patient should be catheterized for several days following delivery. The retrogressive changes in the heart introduce a new danger, and the greatest watchfulness must be observed. Absolute quiet and good nursing, with a full allowance of sleep and freedom from any disturbance, are imperative. Iron should be given as soon as the stomach can bear it.

Treatment of Repeated Abortion and Premature Labor, with Fœtal Death. Lomer,¹ of Hamburg, reported a series of 21 cases of abortion and premature labor, with the death of the embryo or fœtus. He classifies his cases as follows: 1. Syphilitic, in which the disease has existed a long time or was hereditary. 2. A class in which the kidney action was deficient and the patient was threatened with nephritis. 3. Cases in which the patient was continually absorbing necrotic materials from a chronic endometritis.

The treatment consisted in prolonged rest in bed, with the administration of potassium iodide and iron throughout the entire period of the pregnancy. He believes the treatment prevents the rupture of the vessels in the placenta. He strongly emphasizes the chronic anæmia always present in these cases, for which he uses the iron treatment.

Kholmogorov² comments upon the failure of iodine to prevent repeated abortion, even in cases where there is no history or trace of parental syphilis, and adds that when it is accompanied by a systematic mercurial treatment the pregnancy will go on to term. For the past twenty years it has been his practice to give thirty-six inunctions of mercurial ointment, followed by iodide of potash, until the patient has taken from 100 to 130 grammes. In those cases in which abortion has already threatened, and in women who are not seen until the time they have had abortions in previous pregnancies, he begins by giving the iodide of potash until the dangerous period is passed; the mercurial treatment is then given, and followed again by the iodide treatment.

Subcutaneous mercurial injections may be substituted for the inunctions if desired. Lomer, while considering iodine to be the elective

¹ Zeitschrift f. Geburtshülfe u. Gynäk., 1901, Band xlv., Heft 2.

² La Semaine Médicale, November 27, 1901.

prophylactic treatment in abortions from unknown cause, in addition gives iron to combat the chronic anæmia which plays such an important part in the etiology of habitual false labor. He usually gives iodide of iron, but if for any reason this is not tolerated, he gives iodide of potash and pills of lactate of iron, continuing this treatment throughout pregnancy. Out of 22 cases treated in this manner, 21 were successful.

He met with undetected syphilis, nephritis of pregnancy, and endometritis in his series of cases.

Eclampsia. Each year the theory that eclampsia is the result of a toxæmia gains in importance, although the writings of the current year have failed to discover the mysteries of this disease. The supervision of the pregnant woman to prevent the occurrence of toxæmia and the termination of pregnancy when serious and threatening symptoms appear, are no longer discussed. The profession has finally reached that stage of enlightenment. There is yet considerable discussion as to the treatment of the patient when the eclamptic seizures have overtaken her. The employment of morphine, unwisely I think, seems to be gaining ground. Thyroid extract, which has been exploited for many diseased conditions, has been added to the numerous drugs advised for eclampsia. Cæsarean section continues to be advocated by some, and the accumulating statistics are such as to show how very rarely so heroic a treatment can avail. The rapid elimination of poisons and delivery as speedily as may be consistent with the mother's safety are the plans of treatment generally recognized as safest.

ETIOLOGY. An interesting investigation to determine whether or not pregnancy induces a greater susceptibility of the motor zone has been reported by Blumreich and Zuntz,¹ who record their findings in experiments upon dogs in their endeavor to determine the pathogenesis of eclampsia. They used pregnant dogs for their experiments and found them to be more susceptible to creatin than non-pregnant dogs. Creatin was used simply as an index to the irritability of the cortical cells and not in an attempt to prove that it was the cause of the eclampsia. They believe that a series of poisons act in the same way, and that possibly other stimuli may have the same effect. From their results they claim to have sufficient evidence to establish the belief that the same excitability of the cortical cells in connection with the presence of irritating poisons is the foundation of eclampsia in the human being. The facts of pathology show a certain tendency during pregnancy to diseases of the motor zone. Besides eclampsia these are also met with in tetanus and chorea. Windschied is quoted as observing that whenever a woman is attacked with tetanus it is during pregnancy

¹ Archiv f. Gynäk., February, 1902.

or the puerperium. Likewise the phenomena of chorea, when they appear in an adult woman, do so almost always during pregnancy and disappear with its termination. Chorea, ordinarily benign, in pregnancy frequently acquires a character that makes it a menace to life. During pregnancy much weaker stimulations are required to provoke convulsions. It has never heretofore been affirmed that during pregnancy, in the constitution of the cortex of the brain itself, there is present a particular contributory cause which makes the stimuli so much more effective and dangerous. Are there then in the cortex certain characteristic changes which lie at the basis of the convulsions? Since in pregnancy there are appreciable variations from the normal blood distribution in the body, the authors incline to the thought that perhaps the increased supply of blood sent to the reproductive organs might lead to an imperfect nutrition of the cerebral cortex and occasion an alteration in the cells which would increase their irritability. At the same time there would be a heaping up of the products of metabolism which would include the toxic substances aforementioned. In the particular condition of irritability of the cortical cells that present in eclampsia, it needs no search for any special stimulus or class of stimuli to arouse it, for it may be aroused by all possible kinds of stimuli or combinations of them.

Harrison,¹ discussing the etiology of eclampsia, pertinently remarked that while the pathogenesis is still unsettled, it is true that all theories based upon renal disturbance as the primary cause are no longer tenable. In uræmia the insufficiency exists only in the kidneys, while in puerperal eclampsia there is a similar condition in the liver, intestines, lungs, and skin. The blood is more toxic when injected into rabbits than is normal blood. The blood of the newborn is also more toxic in many cases. The pregnant organism is laden with the final products of metabolism, yet the urine of the eclamptic at the time of seizure is less poisonous than normal urine. The liver is unable to render leucomaines circulating in the blood innocuous while the kidneys are impaired in their excretory power. Toxic products accumulate in the blood and irritate the central nervous system, causing convulsions. If the renal function is altered an accumulation of toxic substances takes place, causing lesions of the kidneys.

Dienst² finds both mother and child involved in the eclamptic seizure. The blood serum and the urine of both are similarly pathological, and also the changes in the internal organs. The fibrin-forming elements are increased in the blood, while in the urine, albumin, casts,

¹ Philadelphia Medical Journal, April 19, 1902.

² Centralblatt f. Gyn., May 11, 1901.

and blood are found. His theory is that the essential cause of eclampsia is the insufficient elimination of toxic substances by the liver and kidneys of the mother, this depending upon insufficiency of her heart or kidneys or anomalies in those organs. The metabolic results of foetal life, plus those of the mother, normally increased during pregnancy, are the elements which cause the changes in the mother's blood. If these lead to a toxæmia and not to eclamptic seizures, we may have eclampsia with sound kidneys and no albuminuria; but if there is a gradual accumulation of the poisons, eclampsia with albuminuria appears suddenly. Post-partum eclampsia he thinks due to the same toxins deranging the hepatic function, which affect the kidneys. The vicious circle may thus perpetuate the accumulation of toxins. Pressure upon the ureters, and traction by the ureters on the kidneys, leading to fatty degeneration of the kidney epithelium, may be factors which start the storing up of poisons and lead to further changes in the kidneys and the liver.

SIGNIFICANCE OF ALBUMINURIA IN PREGNANCY. Morse¹ says it is interesting to note that until within the past decade, when a contrary opinion arose, the presence of albumin in the urine was regarded, out of all the other symptoms, as the one sure and infallible sign of kidney lesion, the plain meaning of which was unmistakable. The pregnant woman in whose urine albumin was found was considered to be in a very grave condition. Now we know that the presence of albumin does not necessarily mean disease, as it may be present in health. Having lost its infallibility as a symptom of a most certain disorder, its value from a diagnostic standpoint is necessarily essentially modified. Its gravity and significance must now be determined by the presence or absence of certain other symptoms which alone determine the real meaning of an albuminuria. On the presence of albumin we cannot in safety venture a diagnosis or hazard a prognosis. Five hundred women out of ten thousand have albuminuria during pregnancy, yet of these only sixty develop eclampsia. On the other hand, Gerster has collected a series of 108 eclamptic cases, in which no albumin was found at any time after repeated and careful examinations. However, repeated and careful examinations have shown that there exists a close relationship between the amount of urea eliminated and the development of toxin poisoning. Does its retention cause convulsions and the train of symptoms which occur in eclampsia? Urea is a waste product, poisonous in itself, eliminated through the medium of the kidneys. In health none is retained. If for any reason its production is increased or its elimination decreased, the

¹ American Journal of Obstetrics, April, 1902.

system early shows a disturbance by its presence. A healthy normal individual eliminates 35 grammes in a day. Marx says urea is always found markedly diminished in the so-called toxæmias of pregnancy; when symptoms occur they are not caused by the albumin but by faulty urea secretion. The writer says in conclusion that the weight of evidence seems to be: 1. Against the reliability of albumin as a symptom of serious import. 2. Careful urinary analyses show a definite relation between urea and the development of toxic symptoms.

PREGNANCY AND ALBUMINURIA. D. Berry-Hart¹ reviews Schmorl's work showing that eclampsia is due to a strong irritant developed in connection with the placenta. This substance causes degenerative changes in the liver, lungs, and heart, as well as kidneys; so albuminuria is only one symptom of a systemic toxæmia. This irritant he believes to be a fibrin ferment derived from the placental giant cells. This advance in pathology has led to a modification of the treatment, and particularly to an avoidance of the violent and depressing remedies. The nature of the irritant is hypothetical, and we do not know by what organ or organs it is eliminated, if at all. When albumin is found, rest in bed, milk diet, free evacuation of the bowels, with an occasional hot bath, are all that are usually necessary. If headache and eye symptoms supervene, labor should be induced. If eclampsia has occurred, powerful purgatives, pilocarpine and venesection should be abandoned as being depressant. Chloroform is very valuable and should be given at once to control the seizures. Begin with a hypodermic injection of morphine, one-third to one-half grain, and if necessary in two or three hours repeat with an additional one-quarter grain. The effect of morphine is more lasting than that of chloroform, and constant attention is not so essential. A large saline injection should then be given by the bowel, or in severe cases intravenously. Hot packs are good, but oxygen inhalation seems to do little good.

Labor should be accelerated, but the rapid methods of Dührssen or Cæsarean section are seldom necessary. A minimum of judicious treatment seems most successful.

CONSTIPATION AND STERCORÆMIA IN PREGNANCY. Macé² presented 3 instructive cases, 2 occurring in pregnancy and 1 in the puerperium. In the first case abortion appeared imminent in the second month; there was albuminuria and rise of temperature. A glycerin enema was given and followed by a free evacuation.

Two days afterward, though all hemorrhage had stopped, there was still albuminuria, and a temperature of 101° F. Twenty-grain doses of

¹ Practitioner, December, 1901.

² L'Obstetrique, May 15, 1901.

sodium sulphate was then given and followed by eight free movements ; much of the fecal matter was fetid and appeared very old. The temperature again rising two days later, a glycerin enema was given and another copious movement occurred. After that everything progressed normally.

The second case is more important, as it was associated with hyperemesis. In her previous pregnancy labor had been induced at the eighth month. On this occasion vomiting had produced great emaciation. She had seen her last period in August, 1900. Her illness began in December, and on February 2d she was so ill that induction of labor was suggested. Then it was discovered that her bowels had not been moved for thirteen days. After five days her bowels were thoroughly opened by the use of enemata alone. Much old fecal matter was expelled. The vomiting ceased and pregnancy continued uninterruptedly. The third case suffered from albuminuria during pregnancy and had been placed on a milk diet. Just before delivery she declared that her bowels had moved regularly. Although the delivery was normal, the temperature rose until on the second day it reached 103.8° F. There were no signs of sepsis. One grain of rhubarb was given, followed by a good movement. The day following she was given 1 gramme of benzo-naphthol and the bowel thoroughly irrigated ; masses of old feces came away and she began to improve. Budin has noted that constipation is not infrequently caused by the milk diet in albuminuria, this stercoræmia bringing about a recurrence of the albuminuria and a rise in temperature. Thus albuminuria in pregnancy may be due to stercoræmia directly, and a high temperature in the puerperium may be due alone to retention of feces. Budin, in discussing Mace's cases, said it was not always possible to sufficiently empty the bowels in constipated pregnant and puerperal women. Salines he found might produce liquid motions indefinitely without removing any of the solid feces. Consequently he gave an evening dose of rhubarb or "tamar Indien," followed by a saline in a tumbler of water the following morning. If that failed or was too slow, an oil or a water and glycerin enema was given.

ANATOMICO-PATHOLOGICAL CHANGES IN THE FŒTUS IN PUERPERAL ECLAMPSIA. Alfieri¹ reports his investigations and concludes : 1. That there are certain changes found in a fœtus born of a mother suffering from eclampsia which are found in the organs corresponding to those affected in the mother. 2. These changes are not constant, exclusive, or characteristic of eclampsia, as at times they also result from intoxication of the fœtus and intra-uterine circulatory disturb-

¹ Ann. di Ost. e Gén., 1900-1901.

ances of varied origin. 3. While not denying that the lesions found in the kidney, liver, and suprarenal capsule may have caused the death of the fœtus, the writer thinks it is more probable they are indications of a certain toxic condition, and other causes may have produced death. 4. So far investigations along this line have failed to establish the fetal origin of puerperal eclampsia.

TREATMENT. The time is at hand when pregnant women should be taught the necessity for careful attention at the hands of their physician throughout their pregnancy, and of all the studies that should be made none is of greater importance than a study of the toxæmia that may present itself in various ways. At this time I wish especially to refer to the functions of the liver and of the excretory organs. T. H. Ross¹ has given a very practical résumé of the prophylactic as well as curative treatment of eclampsia.

The most important organ to the pregnant woman and the nascent being within is the liver. By regulating the liver and maintaining its highest working capacity the physician can prevent much discomfort and many ills throughout the puerperium, and that worst of all complications, puerperal convulsions. Do not trust the liver to bear the strain of pregnancy and parturition without aid. The patient should, in addition to correct hygiene and dietetics, take a daily dose of the following :

R. — Eunonymin,									
Hydrarg. chlorid. mite,									
Pulv. ipecac.	.	.	.	.	.	.	.	āā	$\frac{1}{8}$ gr.
Aloin	.	.	.	.	.	.	.	.	$\frac{1}{12}$ gr.
Podophyllin	.	.	.	.	.	.	.	.	$\frac{1}{25}$ gr.
M. Ft. in pil. No. i.									

The best rule is to give just enough to cause one natural bowel movement daily. Different cases will require different amounts, varying from one to three pills. When there is no indication of auto-toxæmia, it may be given by the above-mentioned rule, alternate fortnights for months. The kidneys should also be watched and the urine analyzed frequently. In his experience, where the hepatic treatment is thoroughly used, the kidneys behave well throughout the pregnancy if they were normal at the beginning. As to diet, all foods interfering with proper elimination should be rigidly avoided.

Special Prevention. Should puerperal convulsions threaten, order absolute quiet, thoroughly open the bowels by Epsom salts or a full dose of calomel, or calomel at frequent intervals in divided doses, which the author prefers. Then flush the bowel as high as possible with a warm salt solution. Give veratrum viride frequently in small

¹ New York Medical Journal, April 5, 1902.

ascending doses until the proper dose and time are determined by observing its action. If the stomach rejects it, give hypodermically the fluid extract; $\frac{1}{100}$ grain red iodide of mercury hourly after the final dose of calomel often seems to be of great value in sthenic cases. Where the patient is asthenic, with little or no blood, proceed as above in regard to the bowels, then introduce normal salt solution into the circulation if the case is urgent, and rely on stimulation, general and special, with morphine hypodermically as a sedative if indicated. When convulsions have developed, the writer treats the sthenic cases as outlined above under "special prevention." In urgent cases give a full ounce of a concentrated solution of Epsom salts, assisted by flushing the bowels as high as possible by normal saline solution, preceded by an enema of warm water containing glycerin and Epsom salts. Then administer fluid extract of veratrum viride to its physiological effect only. Reduce the pulse by 8 to 10 minim doses at intervals of fifteen minutes from 70 to 75, watch the circulation closely, and as soon as there is any increase in rate and tension give 5 minims more. Keep the pulse between 70 to 75. For the control of the convulsion before the veratrum viride can act, use chloroform, or if preferred morphine hypodermically.

Cases are here considered in which convulsions come on at or near term, and the uterus should be emptied as rapidly as compatible with safety to the parts. It has never appeared necessary to incise the os. In those cases in which the toxin has overpowered the system before any relief has been attempted, and when the patient is asthenic, veratrum viride is to be omitted and resort had to stimulation, with special attention to elimination. In these cases morphine, nitroglycerin, strychnine, ether, etc., are useful.

VERATRUM VIRIDE IN ECLAMPSIA. There is yet a division of opinion as to the value of veratrum viride in treating eclampsia. Several prominent obstetrical writers have stated that they had failed to find this drug of any great value, while others are loud in their praises of its efficiency to control convulsions, promote relaxation, and elimination.

While only a very few cases are recorded by A. F. Smith,¹ his report quite agrees with my own experience in a much larger series of cases. The fluid extract is a very powerful drug, and unless one is ready to use it judiciously it had best not be employed. Only sthenic cases are suitable for the veratrum treatment. Smith's first case was a patient who had been delivered in eclamptic convulsions one year previously. At that time she was given chloroform to reduce the convulsions. In

¹ Montreal Medical Journal, January, 1902, No. 1.

this her second pregnancy she began to develop headache and persistent vomiting at the sixth month. The usual methods of treatment were applied without avail, and convulsions developed. Tincture of veratrum viride in 25 minim doses was given hypodermically. She had one convulsion after the first injection, but no more. The second case was given 20 minims of veratrum viride hypodermically, and also bled; she recovered. The third case was quite severe, the patient having had twenty convulsions in four days. She was given tincture of veratrum viride hypodermically, with a total cessation of the convulsions.

ECLAMPSIA AND THE THYROID GLAND. H. O. Nicholson,¹ at a meeting of the Edinburgh Obstetrical Society, said that the volume of blood is increased during pregnancy, but that there is a decrease of the solid constituents of the serum, thereby leading to a lower specific gravity. There is a relative diminution in the red blood cells and albumin, while the whites are increased. In these respects the changes are similar to those occurring after the removal of the thyroid gland. There is always a toxæmia in eclampsia; we do not know where these toxins are produced, nor do we know that they are always the same, but that the foetus is largely concerned in their production seems to be a reasonable supposition. An interference with proper kidney elimination will result in the production of eclampsia, hence the whole subject of etiology and treatment rests upon this arrest of the renal function. During pregnancy there is generally a hypertrophy of the thyroid gland. Lange observed that in 25 cases of pregnancy in which there was no hypertrophy, 20 had albuminuria. Marked enlargement of the gland could be in some cases reduced by the administration of desiccated thyroids, thus showing that this medication relieved the functional activity of the gland. The history of a case was cited. The patient, a III-para, had had eclampsia in her two previous pregnancies. Her urine was normal at the sixth month, but in the seventh month albumin was found, and she was suffering with frontal headaches, dim vision, giddiness, and a marked general oedema.

She was put to bed, given a milk diet and a diuretic mixture. In the eighth month she had a convulsion, and was treated with bromides and chloral. At this time the quantity of urine was scanty, and the albumin so plentiful that upon boiling the whole quantity would solidify. She had a pulse of high tension and contracted vessels.

The administration of thyroid extract was begun with 5-grain tablets, night and morning. After a few days it was increased to three times daily. Proteids food were forbidden entirely at first and then gradually resumed.

¹ Lancet, June 29, 1901.

If an eclamptic seizure were imminent, 10 or 15 minims of thyroid liquid were given hypodermically every hour or two. The fresh juice of a sheep's thyroid, 10 minims diluted with an equal quantity of water is better; one-half grain of morphine was given for the immediate treatment of the convulsion.

In three weeks she was able to do housework, was passing a normal quantity of urine, and it was free from albumin. Twelve days from this time normal labor took place.

The writer states that thyroid extract has a diuretic action in some diseases of the kidney, although in health its action is negative. This he thinks is possibly due to the lowering of the arterial pressure and dilatation of the peripheral arterioles.

In the *British Medical Journal*, May 17, 1902, is a further report on the use of thyroid extract in eclampsia, read by Dr. Nicholson before the Edinburgh Obstetrical Society. The first case was a primipara with eclampsia, beginning at the eighth month of pregnancy. She had headache, anuria, albuminuria, solid œdema, etc. She was put to bed and ordered a milk diet. At the first convulsion she was given $\frac{1}{2}$ grain morphine sulphate hypodermically. A second convulsion soon followed, and when she recovered from this she was given 10 grains of thyroid extract, followed by 5 grains every four hours. Only one slight convulsion took place after this. A few days later she was delivered prematurely of a stillborn fœtus. The urgent symptoms all subsided under thyroid treatment. As a second case, further notes were produced on Dr. Nicholson's first case of eclampsia treated by thyroid extract. The patient had reached the eighth month of another pregnancy, and from its commencement had taken thyroid extract continuously. When seen at the seventh month she had no symptoms and had never felt better in her life. The third case was a woman, aged twenty-three years, in the seventh month of pregnancy, who complained of headache and dimness of vision. There was firm, solid œdema, a pulse-rate of 50, a greatly contracted artery, and great diminution in the quantity of urine. She was put in bed and on a milk diet for ten days; improvement was only slight. She was put on thyroid extract, 5 grains thrice daily, and in six days there was marked improvement. She was then given 5 grains every three hours; this was continued for seventeen days, then stopped for a fortnight, and then begun again with a dose of 5 grains daily. The symptoms gradually disappeared, and she was able to resume her household duties. After a normal labor she was delivered of a stillborn fœtus, which had probably been dead from twenty-one to thirty-five days. The fourth case was that of a II-para, aged thirty-nine years. She had headache, giddiness, vomiting, swollen legs, and albuminuria. Thyroid extract in 5-grain doses

every four hours was given, and she was advised to rest in bed as much as possible and live mainly on milk. In two weeks she was well, passing a fair amount of urine with practically no albumin. Fœtal movements were felt by palpation, and the fœtal heart could be heard.

CÆSAREAN SECTION FOR ECLAMPSIA. Sippel¹ regards eclampsia as due to a virulent toxæmia, and cites the coincidence of the cessation of pregnancy and the cessation of the eclamptic seizures. Reasoning thus, he therefore believes that in such cases a rapid termination of pregnancy is indicated.

In cases where labor has not begun, and there is no dilatation of the cervix, he thinks Cæsarean section is indicated, believing it to be a less irritating operation than incision and dilatation of the cervix. Many cases are not suitable, and he quotes Hillman's statistics of 40 cases with 19 maternal recoveries, and of 41 children, of which 23 were saved.

He reports the case of a primipara, aged seventeen years, who was seized with severe eclamptic convulsions five weeks before term. The child was found to be living, presenting with the smaller fontanelle to the right and backward, the cervix undilated and a small and poorly developed birth canal. Cæsarean section, it was thought, offered the mother and child the best chance, and was accordingly done. The child was delivered asphyxiated, but was resuscitated. A gauze drain was used in the cervix.

The mother rallied from the operation, and the kidney action was re-established. She developed intestinal hemorrhage and died on the seventh day after the operation. The autopsy revealed a duodenal ulcer as the seat of the hemorrhage. The kidney epithelium had undergone fatty degeneration, and both ureters were dilated.

Lowenstein² reports three cases in which Cæsarean section was done for puerperal eclampsia. The first case was a primipara, aged twenty-eight years. During pregnancy she had had swelling of the legs and a cough. Her labor was slow, and convulsions developed, of which she had five. The pelvis was normal, the os undilated, the membranes had not yet ruptured, and the head was above the pelvic brim. Cæsarean section was done at once and a living child obtained. A severe bronchitis which developed into a pneumonia resulted. There was marked nephritis, and the patient died from the lung affection. The autopsy revealed a beginning purulent necrosis in the uterus and a developing peritonitis about the uterine stitches. There was also a

¹ Monatschrift f. Geburtshülfe u. Gynäk., 1901, Band xiv., Heft 2.

² Centralblatt f. Gynäk., 1902, No. 5.

stitch abscess in the abdominal wall. The second case was also a primipara at full term. Violent convulsions had occurred with the fœtus in the second position. The os was dilated sufficiently to introduce one finger through it, but the cervix had not softened. She had no labor pains, and the convulsions had not yielded to morphine and chloroform. As the child was alive Cesarean section was done. A transverse incision was made in the uterus, and it came down upon the placenta at the fundus. There was not much hemorrhage, and the uterus contracted well. The child was slightly asphyxiated, but was revived.

Immediately after the operation the patient seemed to be improved, but convulsions developed later, and she died from œdema of the lungs.

The third case was also a primipara, pregnant seven months. She was unconscious when admitted to the hospital. She had five convulsions in two hours after admission. Hot baths and other remedies failed to control the convulsions, and there was much albumin in her urine. Cesarean section was done and the child delivered successfully. The patient died within twenty-four hours from œdema of the lungs.

The cases just related and the results obtained show very clearly and go to prove the position I have always taken, that the speediest method of delivery is not so important as vigorous medical treatment and efforts to empty the uterus by less violent means. The nature of the poison circulating in an eclamptic we do not know; but the widest clinical experience teaches that successful treatment depends most upon its prompt elimination.

SALINE INFUSIONS IN ECLAMPSIA. Robert Jardine¹ says that if it were possible to keep all pregnant women under close observation and on a milk diet, eclampsia would be practically unknown. Those cases which come under observation after the convulsive seizures offer little chance to help. The best cathartic in such cases is Epsom salts. It should be given through a stomach-tube if the patient is unable to swallow. A hot pack or steam bath will secure prompt action of the skin.

Diuretics by the mouth are not to be depended upon. For this the writer employs normal saline solution subcutaneously, to which has been added a small quantity of acetate of soda or bicarbonate of potassium. The normal saline solution has a diuretic action of its own, but this is increased by the addition of the other drug. The normal saline while acting as a diuretic also delays the action of the toxins in the blood and stimulates the patient just as it does in septic cases.

The infusions are given under the breasts or into the subcutaneous

¹ *Lancet*, June 15, 1901.

abdominal tissues, using from one to three pints. The former death-rate in the Glasgow Maternity Hospital was 47 per cent.; under this treatment it has fallen to 24 per cent. Of the writer's 22 cases, 17 were primiparæ and 5 multiparæ. Eleven labors took place at full term, and only one developed convulsions during her puerperium. There were 23 children born, 1 case of twins; 13 were born dead. Of these 3 were too premature to survive; 3 were delivered by craniotomy and 2 were macerated. Three of the mothers died, but 1 death was due to a duodenal ulcer after she had recovered from eclampsia. One was due to a double pneumonia, with multiple gastric ulcers and intestinal congestion. During the forty-four hours she was in the hospital under treatment her bowels and kidneys refused to act. She only passed eleven and one-half ounces of urine in that time. The third case was one delivered by craniotomy. A dead child and a true conjugate of three and one-half inches were the indications. This treatment has lowered the death-rate in hospital work about 50 per cent., and has succeeded in saving more children than the older methods.

THE MANAGEMENT OF LABOR.

Rectal vs. Vaginal Examinations in Labor. While all authorities will agree that the fewer vaginal examinations made during labor the more certain will we be of a perfect asepsis, yet a certain amount of digital examination is absolutely necessary to obtain the exact knowledge of relations and progress of the labor to ensure the best possible outcome for mother and child. Whether this knowledge can be accurately obtained by other means than vaginal examinations has been frequently discussed pro and con. Briggs¹ believes that it can, and in presenting his views says:

The information sought by digital examination is: (1) The size and form of the pelvic cavity; (2) the presentation, size, mobility, and progress of the fœtus, and the position of the presenting part; (3) the condition of the cervix and other soft parts, including the amniotic sac. This information can be gained without infecting the genital tract, by abdominal palpation, auscultation, pelvimetry, and rectal exploration by the finger. The preparation for a rectal examination should be practically the same as for a vaginal. The patient should be placed on her back, knees well flexed, and the hips down close to the edge of the bed. The examining hand should always be covered by a rubber glove. If possible reach the promontory of the sacrum with the index finger, while the thumb rests upon the pelvis, in this way the conjugate

¹ American Medicine, February 1, 1902.

diameter of the pelvis may be estimated. The os and cervix can be readily palpated ; and if dilatation has begun, the alternate contraction and relaxation of the cervical ring are felt. The sagittal suture and fontanelles can be felt. The clearness of the results to one making such an examination for the first time are impressive. The presentation of the fœtus, size, mobility, and landmarks of the presenting parts are precisely determined. The fœtus' position may be determined at an earlier stage by this method of examination than by the vaginal.

Posture in Labor. The different stages of labor can be facilitated somewhat by the posture of the patient. In the first stage of a simple, slow labor, much relief from fatigue and an increase in the pains can be gained by frequent changing to and from a half-sitting posture. At the end of the second stage and in the third stage the posture seems to be much a matter of individual preference. Some writers prefer the lateral position with the body flexed, while others prefer the dorsal. The advantage of the Walcher posture in difficult forceps delivery or after version is well known and constantly practised. The Trendelenburg posture has also a valuable place in many obstetrical manipulations, such as version and reposition of a prolapsed cord.

Porter¹ describes a technique in the management of an ordinary labor that he has invariably followed for years, as follows : The woman lies on her back with the hips brought well to the edge of the bed and a Kelly pad placed under them so as to drain into a vessel ; the small, square pad is most suitable for this. The patient's legs are separated and extended, and may be supported by assistants or by suitably placed chairs, and at the close of the second stage preferably over the knees of the accoucheur, who sits on a chair facing the bed. The patient should wear stockings, her thighs be covered by clean towels, and a sheet should then be thrown over her. Unless the second stage be tedious, this position is maintained from the end of the first stage until delivery. Should the second stage be tedious, the patient can resume her ordinary position in bed, to be again brought into the position described when labor has sufficiently progressed. This position is not tiresome to either physician or patient, and can be maintained for hours without discomfort to either. When the patient has been arranged as described the nurse should first thoroughly cleanse the genitals and inner surfaces of the thighs with soap and water, followed by the application of an antiseptic solution. This should be a routine procedure and done irrespective of any former preparation. It is claimed that in this position, with intelligent management, there will be no infection of the parts during the labor.

¹ Journal of American Medical Association, September 7, 1901.

In case of there being any escape of fecal matter during a pain, it will gravitate at once into the vessel, and all traces removed by the application of an antiseptic solution. A fixed position unquestionably tends to asepsis, while frequent shifting of position is inimical to asepsis. By maintaining this position the physician can with certainty keep his hands aseptic, which he could not do if he were compelled to change his position on account of the frequent shifting of the patient. He is also at an instant's notice prepared to render assistance and to avoid the too common blunder of assisting with unclean hands through haste at the last moment.

This position reduces the number of vaginal examinations, ensures constant readiness on the physician's part, and, better than any other, affords control over the advance of the head as it emerges. It eliminates the unfavorable element of the woman tossing about at the critical moment, and thus favoring laceration ; it gives the obstetrician complete control, and he can manage accurately the rate of advance and delay the delivery of the head until the most favorable time. As the child is delivered, first the head, then the body, is grasped, and the child is placed on a blanket placed on the mother's abdomen above the pubes, allowing sufficient space to manipulate the uterus. This avoids any danger of infecting the cord or eyes with fecal matter. Before moving the child the cord is cut and dressed. This position is most favorable for delivering the placenta, searching for tears, and cleansing at the termination of labor. If ordinary care has been used, the woman is clean and her garments and bed spotless. We have considered those patients who are well to do and can command a trained nurse. The majority are unable to do this, and live in cramped quarters, are generally not educated to a high standard of personal or household cleanliness, depend upon a neighbor or relative without any training or knowledge of asepsis for nursing, and feel that credit is due them if they have in readiness at labor a change of bedlinen and clean towels. Among this class the young physician finds most of his work, and by using the ordinary position his examinations are rendered dangerous, and in many cases at the termination of labor, bed and patient are in a sorry plight, which often continues through the lying-in period. By using the position recommended only soap and sterilized water are needed to ensure the safety of the patient. Soap and water, followed by an antiseptic solution, affords a ready means of cleansing the external genitals, and can be done by the physician himself with little or no exposure.

Having previously sterilized his forceps, ligatures, needles, sutures, scissors, etc., it will be unnecessary for him to leave his position until labor has terminated. Incidentally in such an emergency as a post-

partum hemorrhage, the woman is already in the most favorable position for treatment. A young obstetrician will find this position the most favorable for studying the mechanism of labor. The writer summarizes his claims for this position as follows :

1. There is less liability of infection with fecal bacteria.
2. Fewer examinations are necessary.
3. There is better control of the head at the time of delivery, and consequently less danger to the perineum.
4. The woman can be more thoroughly cleansed after labor, and clothing and bedding are not soiled.
5. There is less danger of infecting the eyes and cord of the child, and less risk of it aspirating fluids into its air passages.
6. In the management of cases among the lower classes in unfavorable environments, this position is especially valuable to young men whose experience is so largely gained among these classes.¹

Anæsthesia during Labor. During the past few years nothing has been found to displace ether from its pre-eminent place in the list of anæsthetics. In obstetrics, as well as general surgery, it stands at the head of the list. There are, of course, special instances where other anæsthetics are indicated, as, for instance, chloroform in eclampsia, and in labor complicated by a grave heart lesion, or spinal anæsthesia in rare cases of kidney lesion. But in the great majority of cases where an anæsthetic is indicated we may rely upon ether with the feeling of greatest security and with the belief that we are using the best means in our hands. In the use of anæsthesia, various indications and methods for its administration have been described from time to time. The following are given by Partridge for guidance in the obstetrical use of an anæsthetic :

The anæsthetic should not be given before the latter part of the second stage, as the second stage is long drawn out in many cases, and too much would consequently be given. When the head is well down on the perineum, and the pains are becoming more frequent and severe, the anæsthetic should be begun. In private practice the physician should administer it until nearly the time for delivery, then hand it over to someone else ; in hospital work it may be entrusted to a nurse. It should be continued as long as the presenting part is being pushed down ; when the pains grow less, as evidenced by a slight retraction of the presenting part, it should be stopped. This process should be continued until the moment of delivery, when anæsthesia to the surgical degree should be produced. This gives the physician full control over the head and prevents many lacerations. In giving chloroform the

¹ Journal of American Medical Association, September 7, 1901.

chin, lips, nose, and cheeks should be anointed with vaseline to prevent any burning from the vapor. Chloroform may be given on a folded napkin or handkerchief held at a short distance from the nose. It should be given slowly, drop by drop. One of Simpson's arguments in its favor was the simplicity of the method in giving it.

Ether may be given in a cone as in ordinary surgical anæsthesia. A fact worthy of notice in this connection is that when in labor the anæsthetic has been given to the obstetrical degree, or even pushed to the surgical degree, vomiting rarely occurs. Its occurrence is so rare that it attracts attention and suggests some complication.

In those cases in multiparæ where the labor is short, or where there are one or two hard pains, an anæsthetic is not needed. In most cases, however, and especially among the refined, and, therefore, more neurotic, an anæsthetic is of much benefit to both patient and obstetrician.

Anæsthesia is recommended also in eclampsia to control the convulsions. Experience, however, would indicate that unless it is continuous it fails in these cases; because during the convulsion the respirations cease and only begin when the patient is coming out of the attack. None of the anæsthetic vapor is inhaled, therefore, no cessation of the convulsion can be expected from its attempted administration. To control the seizures the chloroform must be given between the attacks; this is hardly justifiable until the anæsthesia is to be made complete for operative procedure. Among other anæsthetic agents, chloral has been highly lauded by writers; the writer, however, has been disappointed in its use. It is usually recommended to give it during the first stage to relieve the nagging pains and soften the cervix. The dose usually given is 15 grains every twenty or thirty minutes for three doses. In the writer's experience when given in this way it was often vomited, and when retained seemed to have no analgesic or relaxing effect. In a rigid cervix nothing acts better than a hypodermic injection of morphine $\frac{1}{4}$ grain, with $\frac{1}{150}$ grain of atropine. This usually causes the patient to sleep two or three hours. When she awakens and the pains begin, the cervix softens and labor proceeds satisfactorily. No ill effects seem to follow this treatment.

Spinal Anæsthesia. It is scarcely two years since the production of anæsthesia by the cocainization of the spinal cord came into use, and its real value can hardly be said to have been established. It has given very satisfactory results in the hands of some operators, while others after a few trials have condemned it and returned to the more usual methods. Its use is limited to those procedures in which anæsthesia is only required in the lower portion of the body and lower limbs. French operators have probably been the most energetic in

the endeavor to have it recognized and brought into general use. In a monograph on "Spinal Anæsthesia in Obstetrics," Malartie, of Paris, says: "We are principally indebted to Tuffier for the popularity it has attained. Anæsthetics are required in obstetrics for labor pains and various operations incident to midwifery. The indications for spinal anæsthesia in obstetrics are: 1. Obstetrical operations other than those in which it is necessary to introduce the hand into the uterus. 2. Excessive suffering, which in itself often brings on labor. 3. Retarding of labor due to feeble and irregular uterine contractions. 4. A tendency to hemorrhage, due to uterine atony or abnormal situation of placenta." The writer presents statistics from his own and collected cases. Out of 118 cases 102 were successfully anæsthetized. The indications were many, but the most numerous were curettement after abortion, perinephritis, and forceps deliveries. The amount used in the injection was 1 cgm., while in a few cases a second injection was required. The writer does not regard the symptoms produced by cocaineization as serious. In ten of those cases in which there were unfavorable results they were ascribed to an insufficient amount of drug being used and not to any insufficiency of the drug or the technique. The writer summarizes his conclusions as follows:

1. Cocaine has an analgesic effect for about two hours upon the entire genital tract.

2. It excites uterine contractility, which is at the maximum when the anæsthesia begins to act,

3. Cocaine excites the post-partum contractions of the uterus, and thus is a hæmostatic.

4. It causes uterine contraction independent of parturition and under ordinary circumstances.

Cocaine-anæsthesia is indicated in all obstetrical operations except internal version; in painful labors, as a hæmostatic during or after birth, as an oxytocic in labor delayed from uterine inertia; in producing premature labor, especially in eclampsia.

It is contraindicated in ordinary surgical operations upon the pregnant woman.

It is not contraindicated in lung, heart, or kidney disease. The opponents of this measure decry its use on account of the relaxation of the sphincters, which is liable at any moment to render null aseptic precautions, also on account of the nausea and vomiting which are at times produced. The advantages of this method in most cases over chloroform or other anæsthesia are not sufficient to justify us in taking the greater risk incurred by the puncture of the spinal membranes and cord, and in this country a wise conservatism has characterized the employment of spinal anæsthesia in obstetrics.

The Lower Uterine Segment. Smyly¹ presents a contribution on this subject. Four theories are in existence regarding its formation. 1. That it is developed during pregnancy from the lower part of the body of the uterus. 2. That it is developed from the upper part of the cervix. 3. That it is formed from the cervix uteri. 4. That it is developed from both the body of the uterus and the cervix.

The view which seems probable to him is that it is developed from the lower portion of the uterus during pregnancy.

The writer directs attention to its clinical importance during labor. He believes it prevents rupturing of the membranes by relieving the membranes of a part of the force exerted by the uterus; this force would otherwise be exerted upon the membranes. In the third stage when the uterus is expelling the placenta from the contractile portion the lower segment can be easily felt above the pubis. It is best to wait until the uterus has separated the placenta from its wall before delivering. When it has so separated it can be felt in the lower uterine segment above the pelvic brim. In abnormal labors, if the lower segment be poorly developed, much pressure is exerted upon the membranes, causing premature rupture.

In cases where the lower uterine segment is closely surrounding the foetus, as in normal cases, the umbilical cord cannot prolapse, no matter how contracted the pelvis may be. It is not the contour of the pelvis which determines the prolapse of the cord, but the presence or absence of the lower uterine segment. In deformed pelvises where the lower uterine segment is tightly surrounding the presenting part the cord will not prolapse. For placenta prævia the writer advises the treatment advanced by Robert Barnes: rupture the membranes, bring down a foot, and allow nature to proceed.

This method, while it sacrifices the child in many instances, is safest for the mother and most efficient. In cases where the head has passed through the cervix it can be better delivered by forceps. In cases where the os is not sufficiently dilated to admit the entrance of two fingers this method of version cannot be performed. The writer states that he has never seen a case of placenta prævia in which two fingers could not be passed through the os and cervix. In rupture of the uterus the lower uterine segment becomes very much thinned out, and the foetal parts can be felt with great distinctness through it.

In cases where the contraction ring at the junction of the upper and lower segments of the uterus forms an obstacle to labor, the use of narcotics and patient dilatation with the hand are usually sufficient to remove it.

¹ British Medical Journal, May 18, 1901.

Prevention of Perineal Lacerations. The frequency of unavoidable lacerations in labor has made the subject of their prevention one of wide discussion. Many methods have been proposed, some ingenious, and some irrational. Any method to be successful must have for its basis a thorough understanding of the mechanism and resisting forces of labor.

Dr. E. J. Bacon, of Stamford, Ky., has devised a scoop-shaped metallic perineal protector, and at his request I have made use of his instrument in a number of cases. It has some disadvantages, such as marking the infant's scalp by the edges of the instrument, and unless carefully moulded to the shape of the infant's head and of the birth canal it will prevent the sliding of the head and instrument during the extension of the head at the perineal stage of labor. This instrument is intended to distribute the pressure of the advancing head and to relieve the strain at any one portion of the dilating pelvic floor. It has seemed to me that when skilfully used it has some value, but cannot prevent lacerations in many cases.

Twirbell¹ presents the subject of perineal lacerations in a manner which shows close observation and thorough appreciation of the value of the forces involved in the production of lacerations. His paper was awarded first prize among a number of papers submitted to the *New York Medical Journal* in competition. The writer believes that a certain number of tears of the perineum are unavoidable. However, some can be avoided, and extensive lacerations can be prevented by proper care.

To be able to prevent a tear one must know how tearing occurs. It is common to think of a tear as a split from the fourchette backward. This occurs in very slight tears, but I believe not often in serious ones. In these the whole perineum gives away practically at once; indeed, cases have been observed in which the head was born through the perineum, leaving the fourchette intact. To explain severe tears one must study the movements of the head when extension takes place. In an occipito-anterior case the occiput is practically stationary under the pubes, and the extension consists of a swing forward of the head, the radius of the swing being the suboccipitobregmatic diameter. This brings the head against the perineum. We may consider the vulva as a small oval through which the head must pass, and assume that the upper end of this oval is as stationary as the occiput itself at the time of extension.

When a child is to be born this oval opening is not stretched as by an entering wedge, but by having the lower end pushed away from

¹ Prize Essay No. 7 in the Series of the New York Medical Journal.

the upper ; in the swinging of the head, as it extends, if it slides on the perineum, the space between the pubes and the fourchette will increase ; on the other hand, if the head does not slide during this swing the opening will not increase, and the perineum will follow the motion of the head. This causes a decided stretching of the perineum, but no increase in the size of the vulvar opening ; the perineum in such cases may become very thin and get ready for a stellate tear.

Different degrees of this sliding will occur in different cases. Even with perfect sliding, a precipitate labor may cause a split. The more perfectly this mechanism is carried out the safer will be the perineum. Consequently it is of importance to keep in the vagina a lubricant to facilitate the normal extension. The natural lubricant is the best, and should be preserved. Therefore, douches and especially antiseptic (usually irritating) douches are to be avoided except when their use is imperative. Digital examination removes a great deal of the lubricant and gets the perineum ready for a tear. External palpation should be practised more. The vast majority of digital examinations made during labor are without reason.

Artificial lubricants do not replace the natural one. Delaying a precipitate labor by chloroform will save the perineum in some cases.

In a protracted labor the extraction of the head with the forceps applied before the vagina becomes bruised and dry will prevent many lacerations, especially as the head can be extracted between pains.

The after-coming shoulder does no harm unless a tear already exists. In addition to following the plan here suggested in the care of the woman in labor, a little can be done in the way of support of the perineum. This is best accomplished by keeping the head from coming through too quickly. The special manipulations of the perineum, through the rectum, etc., have never proved of value with me.

Upon the same subject and in the same competition a paper was presented by Walker,¹ which contained the following points :

Three things are to be taken into consideration : 1. The passage should be made as large as possible. 2. The passenger should be presented in its smallest diameter. 3. The passenger should be directed in the axis of the passage. The bowels and bladder should be thoroughly emptied before the second stage begins. The recumbent position is best for multigravidæ or patients having relaxed abdominal walls. It prevents the fundus from falling forward, and in that manner directing the cervix and foetal head backward. A modified Walcher's position (the hips resting on the edge of the bed and the feet upon the floor) is beneficial in protecting the perineum in many cases. An anæ-

¹ New York Medical Journal, December 28, 1901.

thetic should be given at the end of the second stage, more for its property in preventing voluntary and lessening involuntary muscular contractions than for the purpose of simple analgesia. The writer prefers chloroform to ether, on account of the shorter time required in administering it and the greater relaxation produced. In the intervals between pains the hand which has been used in retarding and flexing and pressing the head forward under the symphysis may be used to pull back the perineum. Many tears are due to too sudden extension of the head after the cranium has come through; this sudden extension pulls the nose and cheeks through with a jerk. The posterior shoulder too often tears, and the foetal head should be supported carefully and lifted toward the mother's abdomen.

Only in rare cases does the writer countenance the use of the sterilized hand in rectal manipulations or examinations, for at any moment he may be called upon to use antiseptic precautions in the further treatment of the case—*e. g.*, packing the uterus, etc.

OBSTETRICAL SURGERY.

Traction in the Application of Forceps. Voron, Paris, 1901, has presented a monograph on this subject which won the Prix Bouchet in 1900. The title is "De la traction dans les applications de forceps et en particulia de la traction manuelle par les lacs." It is based on a study of over 100 cases in which traction was made by accessory tractors (lacs) attached to the forceps blades. His conclusions may be stated as follows:

Traction exerted through accessory tractors which are inserted at the level of the child's head is defective in so far that it is not strictly an axis-traction. If, however, true axis-traction cannot be performed, as often happens, it is the best procedure, for it does not hamper the mobility of the foetal head, and the force applied can be safely estimated. In cases where rotation has failed and is necessary, special management is required. Traction with the accessory tractors in cases of contracted pelves with the head engaged or unengaged has rendered good service. The writer states that under these circumstances a force of one hundred and ten pounds can be exerted by the obstetrician without jeopardizing the mother and with chances favorable to the life of the infant. In exceptional cases as high as one hundred and seventy-six pounds pressure may be exerted. When the head is in the pelvis the accessory tractors are not of such great service. Nature will accomplish the rotation, and they should not be used at the moment of birth on account of the danger of lacerating the perineum. When certain

abnormal positions are found due to defective rotation axis-traction cannot be employed. In these cases the accessory traction may be applied as follows :

1. When the anterior parietal presents itself at the superior strait traction by the accessory tractor will bring the anterior region against the pubes and allow the posterior parietal to descend into the pelvis.

2. When the posterior parietal bone presents, either the combined manœuvre or unilateral traction with a mastoid-frontal hold may be used. In the latter case the traction is made by the tractor applied over the anterior mastoid.

3. When there is insufficient flexion, be it either at the superior strait or in the canal, both unilateral traction, with oblique application, and mastoid, with the accessory tractors, should be employed.

4. In cases of occipito-anterior presentations with insufficient flexion, do not use the tractors, for fear of vaginal laceration. Rotation of the head may be promoted by unilateral traction or by divergent bilateral traction with an oblique application. By far the greater number of those delivered had contracted pelves. Eighty-four per cent. of the deliveries were successful, not considering those cases in which basiotripsy was done. Seventy-four children were born alive, 14 were born dead, and six had basiotripsy performed upon them. In his series of 104 cases only one mother died. These results represent an experience of ten years. The writer naturally favors forceps deliveries in moderately contracted pelves and particularly when the accessory tractors are employed.

Obstetrical Forceps in Relation to Tuberculous Lungs, Cardiac Lesions, Anæmia, etc. G. E. Abbott¹ protests against allowing patients affected by any of the conditions named in the title to perform any exercise which would cause prolonged holding of the breath, cardiac strain, or severe muscular exertion. He believes the first stage of labor should be allowed to progress normally ; when the second stage begins, however, the patient should be immediately anæsthetized and the vagina fully dilated by gradually introducing the elongated and compressed hand, and slowly extracting the full fist once or twice. Thus the second stage is passed without strain to heart or lungs. The author believes that the cause of so many tuberculous mothers failing so markedly almost immediately after the birth of their child is due to the severe straining of the lung tissue at the time of delivery. The use of the forceps immediately the second stage has begun, in order to prevent all straining, will save many a mother from an increase of heart symptoms or tuberculous troubles, and, perhaps, prevent an early death.

¹ American Medicine, January 18, 1902.

Correction of Occipito-posterior Positions through Seizure of the Anterior Ear by Two Fingers in the Vagina. Dickinson¹ mentions the following methods in use for forward rotation of the occiput :

1. Knee-elbow posture before labor or before the head engages.
2. Lateroprone position, on side to which the occiput points
3. Flexion ; this accompanies every method.
4. Pressure with two fingers on the temple.
5. Seizure of the head in the hollow of the hand by passing hand into vagina.
6. Forceps, ordinary application.
7. Forceps, reversed.
8. High manual internal rotation.

Not considering the most difficult cases and impacted conditions, let us first consider what our available means are for rotating the occiput forward. The smooth and slippery head offers no projections or handles within reach, save one. At times we may make pressure on a temple or overlapping bone, but ordinarily this procedure does not suffice.

Seizure of the head in the hollow of the hand is seemingly simple, but not often of use, for until after natural or artificial dilatation of a rigid cervix, or with a fixed head, this is not possible. In skilled hands the forceps work well, but in unskilled hands readily do damage. Some accidents may be avoided though by a thorough demonstration and explanation of the dangers and correct methods to the student in his mannikin course. Forceps grasp is hand grasp bettered. When it has been a question of high internal manual rotation and version, the writer has always chosen the former.

By passing the fingers to the posterior shoulder and satisfying yourself that the body rotates to the same extent that the head does, and by over-correction (rotation through half a circle) a case can be treated with less contusion and strain to the child and more safely to the mother from laceration than by version. Each, however, will choose the procedure with which he feels himself most familiar. A simple method, often successful and always worthy of a trial, is the seizure of the ear and exerting pressure or traction to rotate the head. The method is available when the ear is within reach. Two fingers are passed into the vagina and the ear caught between them. If the reach is a long one, or the patient very sensitive, it is better to place the middle finger behind the ear. The index finger has greater strength ; but whether one or the other finger is used with plantar or dorsal aspect to the mastoid side is immaterial. The palm toward

¹ American Medicine, September 7, 1901.

the pubes gives a longer reach. The cartilage of the concha affords a projection upon which to press, or the flap of the ear gives a handle to pull upon. During a pain the rotation which has been effected is held, and progress is resumed in the intervals. It is the writer's practice to over-correct, except where the head is already upon the pelvic floor or when the descent is rapid—that is, if the head is engaged or midway in the pelvis in an R. O. P. position, it is rotated to an L. O. A., provided no undue torsion is felt upon the neck. Then one expects the untwisting of the body to draw the head back to R. O. A. Flexion must be correctly maintained, and the chin must not be swung around beyond the acromion. In making this swing through the half circle, that shoulder which is above the pubes must be your assurance that the body is rotating with the head. The lateroprone position is sometimes of advantage. The anterior ear when it is within reach offers a better purchase for rotation of the occiput forward than any other simple method.

Prolapse of the Cord. H. Henne¹ describes a new method for the replacement of the prolapsed cord. In his case, after all other means had failed, the cause was found to be the low implantation of the placenta, which caused the head of the child to lie in the right aspect of the pelvic canal. The procedure of holding loops of intestines away from the site of operation, by gauze pads, suggested to the writer their probable usefulness for this purpose. A clean towel, soaked in a 1 per cent. solution of lysol and wrung dry, was passed into the vagina, the cord was then replaced by gentle manipulations and the towel gently inserted into the uterus in such a manner that the cord rested upon and was held in place by it. To accomplish this procedure complete narcosis was necessary. After the reposition of the cord and insertion of the towel the hand used was allowed to remain in the vagina until pains began, when the head was guided to its proper position. The remainder of the labor was entirely normal, and no further trouble was had with the cord.

Diagnosis of Short Umbilical Cord. Bickner² presents what he considers a characteristic sign by which it is possible to recognize an umbilical cord either inherently or accidentally short. Several symptoms have been described, but from a careful study and observation of two cases which are appended, the writer believes he has observed a symptom which is easily interpretable, which is significant of the condition and no other, and which is logically explicable on anatomical and physiological grounds. This symptom consists in the frequent

¹ Centralbl. f. Gynäk., 1901, No. 51.

² American Journal of Obstetrics, April, 1902.

jerky discharge of urine in the intervals of the pains of the second stage—an act which is reported as soon as the pain dies out, and is kept up until the foetal head reaches the vulva. Probably the most characteristic phenomenon is the pronounced jerky drawing back of the foetal head with the dying out of each pain. There is, according to Duncan, pain over the placental area and depression over the placental site, especially during the contraction of the uterus or the traction of the forceps. The diagnostic points briefly summarized in the order of their importance are as follows: 1. Recession of the head in the intervals of pains. 2. Urination in small quantities in the intervals of pains after the establishment of the second stage. 3. Arterial bleeding during and between uterine contractions. 4. Pain over the placental site, especially during uterine contraction or during the application of forceps. 5. A desire of the patient to sit up. 6. Uterine inertia.

High Retraction Ring as a Contraindication to Version. R. W. Holmes¹ read a paper on this subject before the Chicago Medical Society, February 5, 1902. He says the importance of the retraction ring as a product of normal and abnormal labor has not received proper recognition. In labor the upper and lower uterine segments are the divisions of the uterus, the former consisting of a part of the uterine body, the latter made up of the cervix plus that part of the body between the os internum and the retraction ring.

Diagnosis of the Ring. One should endeavor to find the retraction ring in every normal labor in order to acquire skill in discovering it. When some obstruction exists the ring will be two or more inches above the pubes—the higher it rises the more will the following symptoms be present: First, increased sensitiveness of the lower segment gradually becoming more marked until actual pain is present in contraction, and also in intervals of uterine activity; palpation will elicit this pain. The round ligaments will be large, tender, and much stretched. The ring will be felt as a distinct groove running obliquely across the uterus (abdomen)—as the ring rises in spare women it may be clearly seen. Examining internally we may find the thin segment bounded at its upper border by a distinct ledge. With these findings the pulse will be more frequent, temperature raised, and in extreme cases the woman may complain of the impending danger. The ring must be differentiated from a full bladder, lower border of the placenta, large fibroids of the anterior uterine wall, and in certain cases twin pregnancies.

Mechanics. At the beginning of labor the potential site of the ring is behind the pubes. As labor progresses the upper segment contracts

¹ Medical News, February 15, 1902.

and retracts, the lower segment dilates and stretches. In the course of a normal labor retraction occurs in almost the same ratio as the child is expelled from the uterus, so the lower segment is only slightly stretched—that is, the ring mounts usually not more than two inches. In obstructed labor retraction of the upper segment goes on more rapidly than expulsion, or expulsion may be impossible from insuperable obstruction; here as retraction of the upper segment diminishes that part of the cavity made up by it, there must be a compensatory stretching of the lower segment. This thinning permits the ring to mount to the umbilicus or even above it. The higher the rise of the ring, the more imminent is rupture. With a certain dogmatism one may state that the higher the ring rises with the resultant thinning of the lower segment, the more strictly must one draw one's lines against performing version. Mere elevation of the ring alone cannot be one's sole criterion—one must consider the general condition of the uterus at the moment of the tentative attempt. A high ring with intact membranes at the moment of operation will offer better results than a lower ring with membranes ruptured for a protracted period. When in doubt of the advisability of performing version, prepare for the operation and pass the hand into the lower segment. If the foetus is tightly grasped by the uterus, if the segment is very thin, and the ring high, alter the plans and try tentatively the axis traction forceps. If they fail after ten tractions, remove them and perform craniotomy. If the child be dead perform craniotomy as the operation of election. Do not perform version on a dead baby long after the membranes are ruptured. In transverse cases perform decapitation or embryotomy, as the case indicates. Decide each case on its merits, and give the mother the most certain procedure; the baby is usually dying or dead, so should have little consideration beside the welfare of the mother.

The Dangers and Diagnosis of Breech Presentations. In 26 cases in which Spencer¹ made autopsies, hemorrhage into the kidney had taken place to such an extent that had the child lived there must have been a permanent derangement. This should impress caution in making pressure over the kidney region during delivery.

Hæmatoma of the liver, injuries to the lungs, and bleeding from the vagina, due to injuries to the uterine mucous membrane by pressure in breech deliveries, may also occur. The latter has been mistaken for menstruation. Hemorrhage into the muscles of the neck is seen often in those infants delivered by the Prague method, and injuries to bones, joints, and the brachial plexus have been noted. In diagnosing a breech presentation the patient should lie along the edge of a bed with shoulders

¹ British Medical Journal, May, 1901.

and head slightly raised. The bowels and bladder should be thoroughly emptied. Auscultation reveals the heart sounds higher than in a vertex presentation. Palpation reveals the foetal head in the upper part of the uterus. The writer urges that external version be done. Rarely is any anaesthesia required, and it is possible to turn the foetus without much difficulty. An abdominal belt may be worn to hold the foetus in its proper position and prevent a recurrence of the abnormal presentation. One-fifth of such cases occur in multiple pregnancies, the mortality being 12.7 per cent. In cases of considerably flattened pelvis with a dead foetus, a malformed uterus, or placenta praevia, the external version should not be done. Fibroid tumors or the winding of the cord about the child's neck may cause the procedure to fail, but it is usually done without special difficulty.

TUMORS COMPLICATING PREGNANCY.

The surgery of tumors complicating pregnancy is fairly well determined. There is little or no discussion as to the early removal of ovarian tumors. Malignant growths complicating pregnancy are relatively rare, and it is a recognized surgical principle that their early removal is indicated if the life of the mother can thereby be saved.

Cæsarean section at term (hysterectomy—abdominal or vaginal) has been utilized to rescue the child and prolong the mother's life. The writer did a panhysterectomy during the year for such a case. The mother died at the end of two weeks. The surgical treatment of fibroids complicating pregnancy continues to be discussed. When the tumor or tumors occupy the upper segment of the uterus, where they will not obstruct labor, many operators prefer not to interfere, guarding the case at labor against hemorrhage, and subsequently watching for the earliest evidence of breaking down or infection of the tumor, when prompt surgical treatment should be resorted to. Others, as will be seen in the following reports, recommend myomectomy during pregnancy for all cases that may require any treatment; while others again fearing the great danger of hemorrhage following myomectomy in the pregnant uterus, prefer to take no chances and at once remove the uterus. The truth doubtless lies in the middle ground, and the operators of largest experience and skill are agreed that each case, when brought to operation is a law unto itself. The number, size, situation, and the tendency to free bleeding will often decide for or against myomectomy. A few noteworthy papers on this subject have appeared during the year and their conclusions are herein given.

Pregnancy Complicated by Epithelioma of the Cervix. R. Sanderson,¹ in presenting a paper on this subject, reported a case of four and one-half months pregnancy which he had operated upon by the combined abdomino-vaginal operation doing a hysterectomy. The operation was done without doing a previous abortion.

He discussed the ethics and treatment adopted as follows: 1. Where pregnancy and operable cancer co-exist, the mother's life alone is to be considered. 2. Before the fourth month vaginal hysterectomy is the orthodox treatment. 3. After the fourth month the alternative methods were: (a) induction of labor followed by vaginal hysterectomy, and (b) hysterectomy without induction of labor by a combined vaginal and abdominal operation. 4. The latter, having regard to the improved statistics of abdominal hysterectomy, was to be preferred. In discussing the subject, Dr. W. H. Tate said it was not necessary to have subjected the patient to the risk of a vagino-abdominal hysterectomy, and that the operation might have been performed more safely by the vaginal route alone. By making a longitudinal incision through the cervix and emptying the uterus of its contents it is possible to remove a uterus in which pregnancy had advanced to the sixth month, if not later. Similar cases were reported in which the results were unsatisfactory as regards a cure, the disease recurring.

Treatment of Pelvic and Abdominal Tumors Complicating Pregnancy. R. B. Hall² summarized his conclusions as follows:

1. In the very small per cent. of cases in which malignant tumors are the cause of the obstruction, they should be dealt with according to the well-established principles of modern surgery. The operation should be done at once, without any reference to the child, if by so doing there is any additional chance of saving the life of the mother.

2. If an ovarian tumor is thin-walled, of large size, and rapid growth, and the patient is not near her full term of gestation, an operation should be advised, even if the uterus is below the tumor.

3. If the tumor is thick-walled and of slow growth, is not causing much if any inconvenience, and rides above the enlarged uterus, an operation is not urgently demanded.

4. If the tumor is small in size, is situated below the uterus, and is fixed either by adhesions or impaction, an immediate operation is demanded.

5. Tapping the tumor for temporary relief should not be done.

6. In fibroid tumors of the uterus associated with pregnancy, where there are but one or two large nodules and they are located in the upper half of the uterus, an operation should be advised only in rare

¹ British Medical Journal, December 14, 1901.

² American Journal of Obstetrics, February, 1902.

instances. These patients can be delivered safely and be operated upon later if necessary.

7. If the tumor is below the pregnant uterus and a large nodule blocks up the passage, an operation should be advised and made early.

8. Myomectomy is usually not to be considered in these cases on account of the increased blood supply. The writer would advise it only when an exceptionally favorable tumor for this method is encountered.

Porter¹ summarizes his conclusions as follows :

1. Pregnancy is a frequent and serious complication of uterine myofibromata.

2. If, because of their size or location, they are likely to interfere with gestation, or jeopardize the patient's life, they should be removed.

3. Each case is a law unto itself, and should be treated accordingly.

4. The tumor and not the pregnancy is the disease, and, therefore, any procedure which results in leaving the tumor and removing the pregnancy is unjustifiable. This, of course, is not meant to apply to those cases in which the fibroids do not in any way interfere with gestation or labor.

5. Pregnancy does not materially add to the risk of operation for uterine fibroid, so far as the mother is concerned.

6. The life of the mother, the life of the child, and the question of future offspring are in the order mentioned the most important matters to be taken into consideration in coming to a conclusion as to the treatment of a case of uterine fibroids complicated with pregnancy.

Surgery of Fibroids in Pregnancy. Green² reports a case operated upon five months pregnant. It had existed for over ten years but had increased very rapidly in size during the pregnancy. The distention was great; temperature was 101° F., and there were symptoms of beginning peritonitis. Two fibroid growths, each as large as a child's head, projected from the uterus. The uterus was also studded with many smaller fibroids. The entire mass was removed, the peritoneal cavity flushed with saline solution, and the wound closed without drainage.

Subcutaneous saline injections were given twice on the day of the operation. The patient recovered.

J. Duncan Emmet,³ in discussing the subject, first notes the general principles of treatment. He maintains that the form of surgical interference always indicated, when surgical procedure is necessary, is myomectomy. Between 1890 and 1900 there were 44 cases of myo-

¹ *Annal. Gyn. and Pediat.*, February, 1902.

² *Journal of American Medical Society*, March 16, 1901.

³ *American Gynecological and Obstetrical Journal*, June, 1901.

mectomy in pregnancy reported; the maternal mortality was 9 per cent., the foetal 21 per cent. From June 1, 1900, to April, 1901, 5 cases of myomectomy in pregnancy were reported; 3 were delivered at term, and term had not been reached in the other 2 at the time of writing. Emmet operated on a primipara, aged thirty years, early in the fourth month of pregnancy. Several myomata could be felt in the body of the uterus. At the operation the uterus was seen to be studded with myomata varying in size from that of a hen's egg to that of a pea. Most of them were near the fundus and some were pedunculated. Two of the largest were situated just above the cervix, one anterior and one posterior. The operation was done on account of these growths, because it was feared that by their enlarging in the later months of pregnancy labor would be impossible. Nine myomata were removed through eight incisions, each incision being closed with a continuous catgut suture and dusted with aristol to prevent adhesions forming. Not much bleeding took place. The abdominal incision was closed with interrupted silver wire sutures. Labor took place at term and the child was delivered in twenty minutes, chiefly by two strong pains. The placenta and membranes came away naturally in the course of one-half hour and the uterus contracted. Owing to the force of the pains the cervix was torn and the perineum incompletely lacerated. The child, a healthy female, and the mother were in good health six months afterward.

LABOR OBSTRUCTED BY PELVIC DEFORMITY.

The management of labor obstructed by pelvic deformity has received considerable discussion during the year. The induction of premature labor, on account of the high mortality of the child, is gradually being replaced by a major operation at term, and the remarkable results of the elective Cæsarean section obtained by a few operators have rather crowded symphysiotomy from the place it once seemed likely to attain. It should ever be remembered, when discussing the relative merits of those means of delivery, that the results of the last few years which set the pace for the practising obstetrician have been obtained by skilled operators operating under the most favorable conditions. That is to say—and I refer especially to Cæsarean section—the operations have been done early, before the patient is exhausted or infected, and the work has been done with an environment more favorable to asepsis, such as in the homes of well-to-do people or the operating-room of a well-equipped hospital.

Results thus obtained cannot be hoped for by the occasional operator working among a poor class of people. To such men the older methods

of inducing labor when possible or delivering by version or forceps or craniotomy even will always be necessary under certain conditions. The leaders of obstetric thought and practice teach and practice on the highest plane of obstetric art and science. The rank and file of practitioners must approach that plane but cannot always work thereon, because their patients and their environment forbid. Fortunately, pregnant women are more carefully studied than formerly, and a seriously contracted pelvis is more frequently recognized, and the patient is placed under conditions favorable to her safe and successful delivery. I can best exemplify the relative merits and arguments of this discussion by referring to a few of the more important papers that have appeared in the past year. It may be that my own work is characterized by too great conservatism, and I must confess to a feeling that the operative era in obstetric practice is being carried to an extreme which will ere long discover an unwarranted enthusiasm. That a large series of selected cases can be successfully operated upon, either by Cæsarean section or symphysiotomy, is a surgical rather than an obstetrical triumph. The writings of the recent past show that there is a tendency to desert the older methods of treatment, and statistics are accumulating which are being contrasted unjustly with statistics of several decades ago. This applies particularly to the treatment of eclampsia and of placenta prævia, by Cæsarean section, and to the results of induced labor before the skilled employment of incubation and gavage.

The indications for Cæsarean section in pelvic deformity are gradually widening until it has been declared justifiable for the lesser degrees of contraction (c. v. 9-10 cm.) for the child's sake. It is in just such cases that induction of labor at the appropriate time has shown its best results, and, when statistics are compared, the higher grades of contraction which make a very poor showing for the latter operation are often included.

The Induction of Labor for Contracted Pelves. Schödel¹ reports from the Dresden clinic 41 cases of induced labor in a series of 15,627 confinements. A ratio of 1 to 381. This is not as large a proportion as given by many other writers.

The cases comprised 5 of symmetrically contracted pelvis, 8 of simple flat pelvis, 27 of flat rachitic pelvis, and 1 obliquely contracted pelvis. The smallest true conjugate for which the operation was done was $7\frac{1}{2}$ centimetres, the largest $9\frac{1}{2}$ centimetres. The longest gestation was thirty-seven weeks and five days, the shortest, thirty-three weeks and two days, the average period of gestation being thirty-five weeks three

¹ Archiv f. Gynäk., 1901, Band lxiv., Heft 1.

and one-half days. The average length of the children was 47.1 centimetres, the average weight 2527 grammes. In those cases in which the operation seemed necessary, special attention was given; for the last two months of pregnancy they were kept constantly under observation, being examined once or twice each week either at their homes or at the clinic, the comparative size of the foetal head and the pelvis being also carefully estimated. Of the 41 cases, 35 presentations were vertex, 4 transverse, 1 breech, and 1 oblique head position; 14 cases of vertex presentation were spontaneously delivered and lived; 4 died a few days succeeding labor; 71.4 of those born spontaneously lived and were discharged in good condition.

In those that died the causes of death were: 1. Inspiration pneumonia. 2. Intracranial bleeding, 1 from long, hard labor, and 1 from premature escape of the amniotic fluid, and 1 subpleural and subpericardial hemorrhage with collapse of the lung.

Twenty-six cases were terminated by operation. In 25 cases version was done, and in 1 the forceps was used; 56 per cent. of the children born by version and extraction were discharged in good condition; the others died in a few days following birth. The attempt was made in each case to secure birth with the head presentation; when this could not be done, and because the child's chances for life are not so good in a head presentation in an unduly prolonged labor, version was done early, either before the membranes ruptured or just after. Forceps was used in 1 case of head presentation in which the mother developed suddenly uterine tympany after the head had engaged in the pelvis; both mother and child did well. In the oblique head presentation the child died two days after birth, and an intracranial hemorrhage with depression of the skull was found at the autopsy.

Version was indicated in 14 of the vertex presentations for unfavorable positions, in 4 cases of prolapsed funis, in 1 case of irregular foetal heart action, and in 1 case of placenta prævia, in which case craniotomy was also done. Thirty-five children were born living and 6 dead. Of those born living, 63.4 per cent. were discharged in good condition, and 9 died within ten days. Of the mothers, 39 recovered; 1 died of acute anæmia, weak heart, and uterine atony. One who had symptoms of thrombosis and was removed against the physician's advice died of embolism while being taken home.

The maternal mortality was 2.4 per cent.

Labor was induced in these cases by introducing a bougie and following it up by an elastic bag. A bougie is allowed to remain twenty-four hours after insertion, then if pains do not begin another is inserted. When the cervix dilates so that two fingers can be admitted the rubber bag is inserted and gradually dilated by filling with from 250

to 500 c.c. of fluid. The average duration of the labors using this method was forty-one hours and one minute.

Symphysiotomy. Ayers,¹ in discussing this operation, says he has performed it thirteen times upon eleven persons. The operation was repeated in subsequent pregnancies upon two women, and in three successive pregnancies in one patient. Eleven children were saved and three lost. There was a firm fibrous union of the joint in all cases, except one which perished. All cases were kept in bed four weeks. In no case was there hemorrhage amounting to more than three or four ounces, and there was no infection of the joint in any case.

Six cases were treated by placing them in the writer's symphysiotomy hammock beds, these giving more comfort, cleanliness, and ease of nursing. There is a prejudice against symphysiotomy: 1. On account of making a wound close to the vulva in labor. 2. The opening of the joint. 3. To a fear of hemorrhage and a laceration of the soft tissues about the symphysis, the possibility of injury to the sacro-iliac joints and a failure of good union in the joint. To secure the best results in this operation the following conditions should be met: 1. Constant apposition of the pubic bones with even coaptation but without compression. 2. The patient should be able to empty the bowels and bladder without disturbing the joint, and the external parts should be easy of access for cleansing. 3. The body should be free from restraint above and below the pelvis. Lactation can then be performed and the body be free from the discomforts of prolonged restraint. 4. Bed-sores are best avoided by swinging the pelvis of the patient in a U-shaped hammock. No suturing of the pelvis or soft parts is needed in this operation. The indications for the operation are:

1. Obstruction due to pelvic incapacity. In those cases where separation of the pubes is limited to two and one-half inches, to secure passage of the head, its adaptability is not easily ascertained, and the shape of the pelvis and head must be considered. The justo-minor pelvis requires a greater relative pubic separation to deliver, as the gain in the dimensions is secured entirely by the separation. The masculine type of the justo-minor pelvis with its thicker and heavier bones encroaching upon the calibre will require more separation than the juvenile form with thinner bones. The obliquely contracted or Nægele's pelvis requires a relatively lesser separation, as the calibre is larger than in the justo-minor pelvis. The narrow, funnel-shaped pelvis requires relatively the least separation, because the separation of the pubic bones secures the fullest increase in the transverse diameter.

¹ Journal of American Medical Association, March 8, 1902.

A separation of one inch of the pubes increases the middle transverse diameter of the brim a fraction over one-half inch.

The flat rachitic pelvis with its projecting promontory and narrow conjugate vera occupies a place midway between the justo-minor and narrow transverse pelvis; the contracted outlet pelvis likewise occupies a mid-place.

2. Obstruction due to malpresentations, such as impacted posterior occipital, and in chin presentations in which the child is living and delivery is not possible without mutilation. Symphysiotomy should be replaced by premature delivery when there is a certainty of impossible delivery without a major operation, when the patient prefers it, or when the physician is not skilled in major operative work. Cæsarean section should be substituted in those cases in which there are obstructions to vaginal delivery by great pelvic contractions, tumors, exostoses, and cancerous growths.

Cæsarean Section versus Symphysiotomy. Reynolds read a paper before the American Gynecological Society at its twenty-sixth annual meeting, in which he considered the justifiability of Cæsarean section in the interest of the child alone. He summarizes his conclusions as follows: 1. When performed late in labor, in a case of uterine infection or other constitutional complicating condition, the general experience gives Cæsarean section such a high mortality that it is considered totally unjustifiable when performed in the child's interests alone. 2. If a Cæsarean section be done early in labor on a healthy patient, for mechanical obstruction, by a skilled operator, there is no additional mortality to the fractional death-rate such operations have in themselves. 3. Symphysiotomy as an operation of choice is decidedly inferior to Cæsarean section on account of its death-rate and the great inconvenience in the convalescence of such patients. Symphysiotomy, however, involves almost no increase in risk of life as compared to craniotomy or prolonged high forceps operations without it. Therefore the writer considers it the operation of choice in the limited number of cases where section is not indicated—*i. e.*, those cases in which the degree of pelvic contraction is within the range where the extraction of a living child without symphysiotomy is difficult or impossible, but with it it is easy. 4. The induction of premature labor in contracted pelves is attended with such great foetal mortality that the writer considers it unjustifiable when considered in opposition to Cæsarean section done in favorable cases at the beginning of labor.

No man, he believes, is justified in performing a Cæsarean section as a last resort, late in labor, or upon an impacted or otherwise constitutionally ill woman, for the sake of the child alone. But that the operator who has a thorough knowledge of his cases beforehand can

operate on such healthy women at the beginning of labor with less risk to both mother and child than is encountered in the performance of unusually difficult high forceps operations in contracted pelves.

Charles Jewett also read a paper at this meeting in which he discussed "The Place of Symphysiotomy as Contrasted with Cæsarean Section." The conclusions were summarized as follows :

1. Symphysiotomy is yet a useful operation, but within a very limited range of pelvic contraction.
2. It is indicated in those cases which require only a small additional pelvic space for delivery.
3. Therefore it is a valuable recourse in those cases in which forceps prove inadequate.
4. Axis-traction forceps, aided by posture, should always be tried before resorting to symphysiotomy.
5. Its results would be much better if it were confined to pelves with a conjugate of not less than 7.5 centimetres.
6. Under like favorable conditions its mortality should be no greater than Cæsarean section.
7. In exhaustion when the pelvic space permits it should supersede Cæsarean section.
8. In those cases where the operator can be sure that the degree of obstruction is well within the safe limit for symphysiotomy, it may be chosen primarily as the alternative of Cæsarean section. In such a case the operation is generally a matter of personal preference.
9. Confined to its proper field, symphysiotomy is a better operation than Cæsarean section for an operator inexperienced in abdominal surgery.

Pelvic Indications for the Performance of Cæsarean Section.

Williams¹ draws the following conclusions from his experience in the obstetrical department of Johns Hopkins Hospital: 1. In 2123 consecutive cases, 278 cases of contracted pelves were noted, a percentage of 13.1 per cent. 2. Spontaneous labor occurred in 71.58 per cent. of these cases, but decreased rapidly in frequency as the contraction became more marked. In conjugate vera measuring between 10 and 9 centimetres, 77.28 per cent. of the cases ended spontaneously; in those between 8.9 and 8 centimetres, 61.54 per cent.; between 7.9 and 7 centimetres, 33.3 per cent.; in those 6.9 centimetres or less, none terminated spontaneously. 3. In view of the present low mortality of Cæsarean section (3 to 4 per cent.), the indications for its employment should be markedly broadened if the patient is uninfected, and the surroundings suitable, the child in good condition, and the operator competent. The absolute indication should be extended from 5.5 to 7 centimetres, and the relative indication from 7 to 8.5 in flat and 9 centimetres in generally contracted pelves. 4. In the interest of the child in moderate degrees of pelvic contraction, forceps upon the movable head and version should be abandoned, and

¹ American Medicine, September 28, 1901.

Cæsarean section performed if the head shows no signs of moulding and descent after one hour of pains in second stage. 5. The operation should not be performed for the relative indication in infected mothers, as, under such circumstances perforation is the operation of choice, if delivery cannot be effected by high forceps or version; if the absolute indication be present the Porro Cæsarean section should be performed.

Cæsarean Section. Charles L. Ill¹ reports a series of 10 cases of Cæsarean section, 3 of which were done for obstructed labor following a ventrofixation. In summarizing his deductions the writer says:

1. Ventrofixation must be an operation of the past in all patients during the child-bearing period.

2. Cæsarean section should be done more frequently than heretofore, and in all cases where the child's life is in imminent danger and the mother's future health is at stake.

3. Early cases of uræmic convulsions with a tightly-closed cervix, especially in primipara, afford a better chance by Cæsarean section than by any other means.

4. The fundal incision has the advantage of a smaller wound and is less likely to form adhesions to the anterior wall of the abdomen.

5. Absolutely absorbable materials should be used in closing the uterine wound.

6. Operations previous to the beginning of labor are as successful as, if not more so, than done after the beginning of labor.

7. Quickness of operation and perfect asepsis are greatly to be desired in all cases.

Three Cæsarean Sections in One Patient. Wiener² reports a case in which a dwarf had twice previously undergone Cæsarean section at the Munich Maternity Hospital. After the second section an abscess developed in the abdominal wall; it evacuated itself and left a fistulous tract, which discharged during the following pregnancy. Close to term, there occurred one night serious flooding through the fistula. The patient was at once admitted to the hospital, the fistula plugged, and an abdominal section begun as soon as possible. There were firm adhesions between the uterus, parietes, and omentum. After separating them a transverse incision was made in the fundus. As the placenta was attached to the anterior wall and did not extend to the fundus it was not wounded. The fistula did not open into the uterus but was in direct proximity to the placenta. Evidences of suppuration were also found in the cicatrix of the second operation. A recently dead child

¹ American Journal of Obstetrics, November, 1901.

² Centralblatt f. Gynäk., 1901, No. 23.

was delivered and a retroperitoneal hysterectomy done. Saline infusion was used in the bowel and subcutaneously; the patient recovered.

Post-mortem Cæsarean Section. Lindvist¹ reports a case of a primipara, aged thirty-six years, who was seized with eclampsia in labor. She died in her seventh convulsion at 6.45 A.M., with symptoms of œdema of the lung. The foetal heart sounds were audible but weak and slow. At 6.50 A.M. the uterus was opened and a child weighing seven and three-quarter pounds was extracted.

It was asphyxiated, but was revived after half an hour's effort, and lived.

Auto-Cæsarean Section. Löffler² reports such a case. The subject, aged forty-two years, had been confined to bed through weakness and pains in her limbs for eight months. She was afraid her strength would not be sufficient to give birth to the child, and hence tried to help herself. She used an ordinary pocket-knife and with it opened her own abdomen and womb. As the child dropped from the womb she fainted; regaining consciousness after a time, she wakened her thirteen-year-old daughter, who was sleeping in the same room, and with her help sewed up the abdomen, using a waxed hemp thread in a running suture and catching up only the skin. A dressing of moss, with a covering of dirty cloths, was put over the incision, and the wound healed by first intention without the slightest septic complication. The knife was dull and rusty, likewise the needle. The incision extended from 4 centimetres above the symphysis to 4 centimetres above the umbilicus. The amount of blood lost was estimated at 2 litres. Eight weeks afterward mother and child were doing well.

Rupture of the Symphysis. Ruth³ reports a case from the clinic of Riga. The patient was a II-para and had previously enjoyed good health. In her second labor she was attended by a midwife, who did not use antiseptic precautions in her examinations. Birth was delayed and the midwife attempted to pull the head out with her hands. Not succeeding, a physician was called, who, with difficulty, delivered with forceps. There was extensive laceration, also hemorrhage, and sepsis developed. In this condition she was seen by Ruth.

There was no union of the lacerations, and an abscess was found behind the symphysis; this abscess had a fistula leading into the connective tissue of the pelvis. The symphysis had been ruptured, but the bladder was not injured. The abscess was opened and drained, and stimulating and supporting treatment given, but the patient died.

The autopsy showed the septic infection to have been independent of

¹ Monat. f. Geburts. u. Gyn., September, 1901.

² Wien. med. Wochenschrift, 1901, No. 10.

³ St. Petersburg med. Wochenschrift, 1901, No. 24.

the ruptured symphysis ; also that the abscess cavity had no connection with the joint.

Pelvic Fracture during Labor. Bird¹ reports a case of this accident which occurred in a primipara, aged twenty years. Her history was negative, the pregnancy was free from complications. Labor was slow, and the second stage did not progress. The head descended to the floor, pains were very strong but not effective. During a hard pain, accompanied by violent movements, a distinct, sudden, snapping sound was heard on her right side, but no marked relaxation or mobility was noticed. A parting of the symphysis or a fracture of the femoral neck was suspected, but on investigation neither was found. The forceps was then applied and with difficulty advanced the head sufficiently to allow labor to be completed naturally.

Several hours after she was unable to move because of a pain in her right groin. Examination revealed a diagonal fracture in the right horizontal ramus of the pubes, and slight displacement and mobility and crepitus. A seven-inch rubber adhesive plaster was passed around the pelvis, and the patient was placed upon a mattress with a hole under the buttocks. The bandage was tightened as necessary with safety-pins, and her convalescence as regards fracture was uneventful.

She was catheterized every six hours for two weeks, when she regained control of that function. Her position caused the flow of lochia to be interrupted, making antiseptic irrigation necessary.

At the end of four weeks passive motion of the legs and thighs was made, and the fifth week the plaster bandage was removed. She was able to walk the seventh week and eventually made a complete recovery.

Spontaneous Rupture of the Uterus. Murray² believes that the signs of threatened rupture of the uterus are usually very clear, and its occurrence is a reproach to the physician in charge of the case. He divides the causes into traumatic and spontaneous. Under traumatic are classed all cases brought about by mechanical violence, such as an unskilful version, the forcible introduction of hands or instruments into the uterus, and the improper use of forceps. These he calls internal traumatisms. External traumatisms are the result of blows or falls. A spontaneous rupture has the contraction of the uterus as its immediate determining cause. Most of these cases, however, are due to some abnormality in either the "passage or the passenger."

As examples of abnormalities of the "passage" he cites a rigid os and contracted pelvis ; of the "passenger," hydrocephalus or malpre-

¹ American Journal of Obstetrics, February, 1902.

² Journal of Obstetrics and Gynecology, British Empire, February, 1902.

sensation. When the os remains rigid, the lower uterine segment becomes thinned out, while the powerful muscular tissue of the upper segment is gathered together into a sort of cap at the upper pole. The great strain increases and the uterus ruptures in the lower uterine segment in the neighborhood of its junction with the upper.

The tendency of the tear is to extend transversely. In contracted pelves the location of the tear depends upon the crushing and tearing of some portion of the uterus between the head and the pelvis. There are other cases in which spontaneous rupture occurs without the presence of any of the causes enumerated. This group is divided into three classes :

1. An interstitial pregnancy rupturing about the fifth or sixth month, even following a slight or the first labor pain.

2. Spontaneous labor following abnormal conditions, such as bicornate uterus, myomata of the uterus, and a uterus previously the subject of a Cesarean section.

3. Cases have been reported in which rupture took place at the beginning of labor in a uterus of normal outline and in which there was no gross lesion. Simpson reported one such case in which the rupture was due to a marked fatty degeneration of the uterine muscle fibres.

Förngren¹ reports 2 cases of spontaneous rupture of the uterus during delivery, treated by different operative procedures. One patient was a VIII-para, aged forty-one years, and had previously had two instrumental labors. About six hours after labor began the membranes ruptured ; about nine hours after this sudden pain and cessation of the uterine contractions occurred. On the following morning the abdomen was greatly distended, and the fetal breech was felt through the abdominal wall. On passing a catheter into the bladder blood passed and the end of the catheter could be felt in the vagina. Basiotripsy was performed and the child easily delivered. The placenta was in the peritoneal cavity to the right of the uterus. On vaginal palpation a T-shaped laceration was found in the lower uterine segment. The palpating band could be passed into the bladder and into the peritoneal cavity. The laceration was closed by sutures through the vagina, and then the abdomen opened. The transverse tear was found extending into the right broad ligament. There was blood and fetid air in the abdominal cavity ; this was removed and a small sloughing portion of the uterine muscle cut away. The uterus and transverse tear were repaired with catgut, also the torn peritoneum above the bladder. The wound was closed without drainage. The patient died within twenty-

¹ Centralblatt f. Gynäk., 1902, No. 1.

four hours, and at autopsy a large blood clot was found in the peritoneal cavity.

The second case was a patient, aged forty-three years, and in her twelfth pregnancy. The abdomen was very pendulous, the child's head seemed in bad position, and was too large for the pelvis. A foot was drawn down, and while this was being done a transverse laceration of the lower uterine segment took place, the child's head protruding through it. The child and placenta were successfully delivered, but the child perished in about two hours from intracranial hemorrhage. Several hours afterward the abdomen was opened. There was much subperitoneal hemorrhage, detaching the peritoneum in places. The appendages were tied off and the uterus amputated at the level of the tear, after making a flap on the post surface. This flap was sewn to the flap of the anterior peritoneal coat of the uterus.

A piece of iodoform gauze drainage was passed into the lower end of the wound to the stump of the uterus, making drainage extraperitoneally. The patient made a good recovery.

Rupture of a Pregnant Uterus during Divulsion with a Faulty Dilator. Dr. Le Roy Brown¹ reported before the New York Obstetrical Society the rupture of a six weeks' pregnant uterus at its horn, during a divulsion with a faulty dilator. The accident occurred preparatory to emptying the uterus of the remains of a miscarriage. The writer was sent for by the physician in charge, on account of the rupture which had occurred while attempting divulsion. The miscarriage was caused by an injury received by the mother in playing with her child.

The physician discovered that the tear extended up to the left horn and that a large instrument could be passed into the general peritoneal cavity. In consultation it was decided to operate at once. There was a slight amount of blood in the abdominal cavity. The tear was situated in the lower portion of the uterus, between the layers of the broad ligament, and in the upper portion extended to a point just below the insertion of the Fallopian tube. The layers of the broad ligament were separated and the tear closed with two rows of catgut and the peritoneum closed over all. On account of the tear having occurred previous to the curettage, and the possibility of there being a mild sepsis (there having been a ten days' flow), a piece of sterile gauze was inserted in the cul-de-sac for drainage. It was removed on the seventh day, and the patient made an uneventful recovery.

This report was made principally to emphasize the faulty method of manufacture of some divulsors. The one used was an ordinary

¹ American Journal of Obstetrics, May, 1902.

Wathen divulsor, but faultily made in not being furnished with a shoulder where the blades join the body of the instrument. The absence of a shoulder permits the blades to be passed too far into the uterus and upon opening they must certainly do injury, even to the point of rupture, as in this case.

PLACENTA PRÆVIA.

The Treatment of Placenta Prævia by Cæsarean Section. The high maternal and foetal mortality of placenta prævia, and the steadily decreasing maternal mortality of the elective Cæsarean section, have led obstetricians the world over to consider the wisdom of applying that operation to improve the results of the usual treatment of placenta prævia. I shall present some of the statistics and arguments that have been offered in favor of and against so heroic a plan of treatment, and it will then be seen that the operation can only be seriously considered for one class of cases under conditions that rarely present themselves, and should be employed only by one whose obstetrical judgment is well trained and who possesses operative skill in both obstetrics and abdominal surgery.

Zinke¹ presents some valuable statistics bearing on the frequency and mortality of placenta prævia. The percentage of this complication in labor is about 1.5 per cent. The maternal mortality is 25 per cent., the foetal mortality 65.21 per cent. The average mortality of modern Cæsarean section, collected from the cases and estimates of sixteen European and American authors is 4.14 per cent. for the mother, and 13 per cent. for the foetus. In Porro's operation the maternal mortality is 37.89 per cent., the foetal 22.22 per cent. Thus the foetus is in less danger than in placenta prævia treated by purely obstetrical means, but the mothers in a large number of these cases had undergone Porro's operation for rupture of the uterus, cancer of the cervix, or other exhausting disease, and had been in a large majority of cases exhausted by slow labor and unsuccessful efforts with the forceps.

Zinke records eight Cæsarean and Porro operations since 1889, done for placenta prævia. In five both mother and child were saved. In one the child was saved, but the mother, very weak and exhausted before the operation, died in eleven hours. In two cases mother and child were both lost, but the conditions were exceedingly unfavorable in both, and in the second the foetus had been dead for two days. He thinks there are some cases of partial placenta prævia that can be suc-

¹ American Gynecological and Obstetrical Journal, October, 1901.

cessfully treated in the old way, but firmly believes that the Cæsarean and Porro operations are elective procedures in all cases of central and complete placenta prævia; especially so when the patient is a primipara, when the os is closed and the cervix not diminished in size or extent, when hemorrhage is profuse and cannot be controlled by tampons, and separation of the placenta around the internal os is difficult or impossible. Zinke further discussed this question before the American Association of Obstetricians and Gynecologists,¹ and thus stated his position:

"I firmly believe the Cæsarean and Porro operations are perfectly legitimate and elective procedures in all cases of placenta prævia, central and complete, and especially so when the patient is a primipara, when the os is closed and the cervix unabridged, when hemorrhage is profuse and cannot be controlled by tampons, and separation of the placenta around the internal os is difficult or impossible.

"That there are cases of 'partial' prævias that may be successfully treated in the old way I do not doubt. Perhaps a small majority of all the placenta prævia cases can be treated successfully, as to the mothers at least, in the manner of Fry and De Lee (version and extraction). But what of the large minority of mothers who succumb and the great majority of children that are sacrificed at once?

"The question presented is very serious and should be earnestly and profoundly considered by everyone, and when confronted with a case of central or complete placenta prævia, or any other variety where dilatation of the cervix is impossible or difficult, the patient and her immediate friends should be made acquainted with all the facts concerning both methods of treatment."

In the discussion Gillette believed that there was a distinct field for the classical Cæsarean section and the Porro. In desperate cases he thought the Porro the better operation, because if infection occurred afterward it would be the fault of the operator and not the operation.

As to the danger of secondary hemorrhage, emergency cases could not stand hemorrhage; therefore, a few ounces of blood might mean life or death.

There was always danger of sepsis, and in cases where much blood was lost the uterus did not contract properly. The non-contraction of the uterus meant retention of placenta and danger of infection, which constituted the great danger. Cæsarean section does away with all this. Carstens said the profession needed to be stirred up on the line of treatment of placenta prævia. While these patients could be operated upon by skilful abdominal surgeons in hospitals with good

¹ American Journal of Obstetrics, November, 1901.

results, many of these cases occur in the backwoods where there are no hospitals, and delay would mean fatal hemorrhage. So what was the use in preaching and advocating Cæsarean section in such cases where neither a hospital nor a competent surgeon is available? Edward J. Ill spoke of the results after forcible dilatation; the tear usually extended up into the broad ligament, and usually the woman was never well afterward, while a woman who underwent Cæsarean section was well in four weeks.

Blume said that if generally advocated he thought the mortality of Cæsarean section would be 50 per cent. or 60 per cent.—at any rate far greater than treating placenta prævia by the older methods. Powell said that with the advances in surgery and the excellent results following Cæsarean section, there were undoubtedly cases where it could be resorted to in primipara, with an os that would not dilate, with profuse hemorrhage that could not be arrested, etc. But he thought it would have a bad effect if the information was sent broadcast with the approval of the Association, that the time had come when Cæsarean section should be permanently considered with reference to placenta prævia.

Relative Merits of Bipolar Version with Slow Extraction and Accouchement Forcé in the Treatment of Placenta Prævia. Fry¹ reports 14 cases of placenta prævia treated in this manner. All of the mothers recovered, and 5 out of the 14 infants were born alive. Of the children lost, 2 (twins) were not viable; 1 was at seventh month, and 4 were dead when the case came under observation. One serious objection to bipolar version and slow extraction is that the infantile mortality is greater. When intervention is necessary before viability of the foetus is attained, or when the foetus is dead, slow delivery is certainly indicated. If the life of the child is endangered during slow extraction, the obstetrician must decide between it and more rapid delivery with its increased maternal risks.

Treatment of Placenta Prævia. R. A. Murray² discussed this topic at the meeting of the American Gynecological Society, held in Atlantic City, May 27 to 29, 1902. He described the varieties of placenta prævia and gave its frequency of occurrence as 1 in 600 to 1 in 1200 pregnancies. It is a much more frequent occurrence, six times, in multiparæ. Its greatest danger is hemorrhage, and the aim is to safely deliver the mother, and, if possible, save the child. Abortion is advised if the condition be recognized early. If the child is viable the vagina should be tamponed, and later delivery accomplished and the uterus

¹ New York Medical Journal, August 17, 1901.

² American Medicine, June 7, 1902.

irrigated. Tampons and bipolar version were advocated and Cæsarean section was considered unjustifiable as a routine plan. His conclusions were as follows :

1. The good statistics in elective Cæsarean section should not be used for comparison in this study ; because of the hemorrhage, etc., having materially affected the patient.

2. These patients can seldom be moved to hospitals, even if the additional shock of operation could be borne.

3. Good surgeons are rarely at hand, and the operation is seldom elective, as hemorrhage is usually the symptom which leads to the call for a physician.

4. Cæsarean section might be justifiable if there had been no hemorrhage, and the pelvis was contracted. Williams (Baltimore) says there is but a small field for Cæsarean section in the treatment of placenta prævia. In primiparous women with a long, hard cervix, it might be indicated ; but the operation should be done by a trained operator in a well-conducted institution if good results are to be obtained.

The discussion of the question abroad has progressed along lines similar to those indicated above. Asepsis in obstetrics and better trained obstetricians have materially reduced the mortality of placenta prævia in the past decade. The gratifying mortality rate of elective Cæsarean section for pelvic deformity should not be compared with the mortality rate of placenta prævia. The conditions are different and will continue so to be until the dangerous forms of placenta prævia can be diagnosed before the occurrence of hemorrhage.

The operation to be really elective should be performed before the patient is exsanguinated. Again, the one and only variety of placenta prævia for which Cæsarean section can ever be seriously considered—*i. e.*, the central variety—in a primigravida with tightly closed cervix, the hemorrhage usually occurs before the child has reached full development, a fact not sufficiently appreciated by those who argue in favor of Cæsarean section for the sake of saving the child. The present high foetal mortality of placenta prævia is in many cases due to prematurity, and Cæsarean section will not lessen that element of risk to the child. Thus, it will be seen that many conditions must be present to make Cæsarean section justifiable, and anyone who has had to deal with a number of cases will appreciate how rarely such conditions are encountered. The present attitude of the profession toward this question should be about as follows : Cæsarean section, and by preference the Porro operation, is not only justifiable but indicated under the following conditions : A primigravida, an undilated and rigid cervix, hemorrhage not profuse enough to seriously weaken the patient, a fully developed and living child, a skilful operator, and an aseptic environ-

ment, preferably a well-equipped hospital. The writer's experience convinces him that those conditions will be encountered so rarely as to practically exclude Cæsarean section as a means of treating placenta prævia.

POST-PARTUM HEMORRHAGE.

The Prevention and Treatment of Post-partum Hemorrhage.

Byers¹ stated that the average amount of blood lost in childbirth is about one pound. Clinically, however, no fixed amount can be taken as constituting hemorrhage, as each patient differs in this respect from others.

The obstetrician must expect that post-partum hemorrhage may occur where there is a history of hemorrhage at previous confinements; where pregnancies follow each other rapidly; where patients take little exercise, eat freely, and use stimulants; in elderly primipara, and where metritis exists during pregnancy.

Over-distention of the uterus or the presence of a tumor also favors hemorrhage. Albuminuria, extreme mental depression, and disturbances of the vascular system predispose to it.

During labor, pains which are strong and quick, but cease suddenly, with long intervals between the pains, should arouse suspicion of uterine exhaustion; rapid, jerking pulse, with low tension, is also present in many of these cases.

In prophylaxis, attention is called to the importance of managing properly the third stage of labor. The left hand of the obstetrician must follow down the uterus, not using massage or stimulating it in normal cases, but controlling it. The cord is tied by two ligatures, one near the child and the other close to the vulva of the mother. When the placenta has been separated, several inches of the cord are expelled; this can be determined by the altered position of the ligature upon the cord. The separation of the placenta is also recognized by a swelling above the pubes due to the bulging of the lower uterine segment, which is at times taken for a distended bladder. The uterus rises up suddenly and becomes more movable than formerly.

In addition to the proper delivery of the placenta and the removal of all portions, it is most important in avoiding post-partum hemorrhage not to deliver in the absence of pains. This is almost sure to be followed by severe hemorrhage. The writer advises the use of strychnine and ergot before and during labor in suspected cases, with hydrochloric acid in plethoric cases and iron in those who are anæmic. In the actual treatment of hemorrhage he would use uterine massage, hot

¹ British Medical Journal, 1900, No. 2072.

intra-uterine douching with normal salt solution, the introduction of the hand and the removal of adherent portions of placenta or membrane, packing the uterus with antiseptic gauze, and dragging down the uterus, after gauze packing, by stout tenaculum forceps passed through the lips of the cervix. Should hemorrhage occur from lacerations, they must be sutured. In the after-treatment the injection of normal salt solution with stimuli and abundant nourishment is indicated.

Bishop¹ recommends a plan which he claims is absolutely reliable. It is based upon anatomical and physiological facts and supported by experience. The first procedure is to raise the uterus until it is higher than the heart, this is quickest done by placing a table under the foot of the bedstead. The indication is to practically place the patient in the Trendelenburg position. This controls the venous loss and favors the return of blood from the lower limbs, thus taking the place of the manœuvre of bandaging the legs upward.

Then apply pressure on the abdominal aorta. Five-sixths of the blood supply of the uterus can be thus shut off, the other one-sixth being carried to the uterus through the ovarian arteries above the point where pressure can be applied. The advantage of this is that the main current of blood is blocked, and the uterine fibres are recuperating and obtaining blood enough through the more devious route of the ovarian arteries. This preserves the vitality of the organ and assists in the formation of small plugs in the open arterial mouths. At any accessible point over the abdominal aorta the closed fist should be applied with its ulnar surface resting upon the aorta as it lies on the left side of the vertebral column, and just sufficient pressure exerted obliquely backward and toward the right to compress that vessel. This compression should be maintained until the uterus begins to contract, which coincides with the beginning strong impact of the blood current against the compressing hand. With the other hand the state of the uterus can be judged from time to time. When it contracts the compressing hand is slowly and gradually lifted, not permitting the full force of the aortic current to bear at once upon the clots formed by the circulation through the ovarian arteries. When this contraction is established, being natural, it will be trustworthy. The parts should be watched for several minutes, as you may find that you have removed the pressure too soon, and it will be necessary to repeat it. If so, after a while you may remove your hand slowly and cautiously and will find that now all the clots are secure. Allow the bed to remain in its inverted position for twenty-four to forty-eight hours to favor the blood remaining

¹ *Lancet*, April 13, 1900.

concentrated in the vital centres. This proceeding alone is the primary duty of the obstetrician. One hand can be replaced by the other, or if both are tired you can teach the nurse to replace your own by hers. During the time she keeps up control you can perform any other measures, such as giving saline transfusion, removing clots, retained membranes, etc., with perfect safety and ease, since the field is clear of blood and the patient quiescent.

THE PUERPERIUM.

Treatment of Puerperal Infection. The use of the curette in treating puerperal infection has been very clearly indicated by recent investigations. It is undoubtedly an instrument of great value in properly selected cases, and especially after abortion and miscarriage. These conditions are specially favorable to the saprophytic infection, and it is to these types that its usefulness is practically confined.

Serum therapy has not made much progress in the treatment of puerperal infection. Indeed, very few cases have been reported during the past year, a fact which shows an abatement of the enthusiasm which followed its introduction a few years ago.

This enthusiasm induced many trials of the serum in cases without a bacteriological study, and were usually associated with other plans of treatment which interfered with correctly judging the actual results due to the serum itself. Reports of cures following its employment were frequent, and there was much inflation of its value. As a matter of fact, bacteriology and bacterio-chemistry are not sufficiently developed and exact to make serum therapy of known and definite value to obstetrics.

The use of salt solution as an adjuvant in treating puerperal infection continues to have a place, but its limitations are better recognized and it is not used so vigorously and in such large quantities as formerly. The danger of flooding the tissues with salt solution is now recognized. In moderate amounts it continues to hold a useful place. Discussions as to the value of puerperal hysterectomy have been less frequent, and the profession has approached this question with great caution. Its status remains about the same as when we discussed it in the last two numbers of *PROGRESSIVE MEDICINE*. Several enthusiastic reports on the use of unguentum Credé have appeared. The value of this treatment has appeared to me so problematical, and the reports so enthusiastically made, that it has seemed pure empiricism and not worthy of extended notice in this review. The same may be said of hypodermic injections of quinine, of mercuric chloride, or other drugs.

W. R. Pryor,¹ in a very practical manner, discussed the types of puerperal infection in which the curette is indicated. He divides these cases into the saprophytic and septic types. In the saprophytic type the infection is superficial, there is moderate fever and no danger to life, but as this form of infection renders the patient more susceptible to the severer forms it is of great importance that preventive treatment be applied. Therefore, we must remove the dead material within the uterus. About 75 per cent. of cases are non-septic and 25 per cent. septic, so that curettage should be done in about three-fourths of the cases. In the treatment of septic cases the best authorities agree that the infection is deep within the uterine tissue, and that no local treatment should be applied to the uterus. Simple curettage will not reach the infection, and should not be done, for the patient would be greatly endangered by such a procedure, in that it would only increase the area of infection. Williams and Krönig, who never treat the uterine cavity, have a mortality of only 5 per cent. in septic cases. It is very important to first determine whether a certain case is saprophytic or streptococcic in origin. When the clinical symptoms are not plain this can usually be done by a bacteriological examination.

Fry² says the curette is a very valuable instrument to the obstetrician as well as to the gynecologist, but that its indications and contraindications are not so well understood by the obstetrician, and as a result much harm has resulted from its indiscriminate use.

In earlier days puerperal fever was treated indiscriminately by radical intra-uterine treatment, curettement, irrigation, etc., without any regard to the selection of cases. We now use the curette instead of the finger to remove retained portions of membrane or placenta, foreign bodies, blood clots, etc., from the uterus. We also use it in abortions when the cervix cannot be dilated and in the later months of pregnancy. The complications of abortion and miscarriage are manifested by hemorrhage or fever, perhaps both. The hemorrhage may be coincident with the expulsion of the ovum, and it may be continuous thereafter or intermittent.

Decomposition of some retained tissues with foul odor to the discharge and fever is another complication, and in both of these the curette is clearly indicated.

At times the curette may be preceded by the use of a tampon, in the hope that the uterus will expel its contents. If expulsion does not take place in twenty-four hours, the curette should be used. Gauze packing should be removed in twenty-four hours, for in incomplete

¹ New York Medical Journal, December 25, 1901.

² Journal of American Medical Association, September 7, 1901.

abortion the fever is produced by the action of the ptomaines which are produced by the action of bacteria upon the retained tissues.

In criminal cases the infection is usually a streptococcus infection, and is a more serious one. In this infection a curette should not be used, because by its use the infection is made general instead of being localized. The clinical history of cases of streptococcic infection bear this out, as after curetting they invariably get worse, and more cases end fatally than in those not curetted. Hence, we should first discover what kind of an infection we are dealing with before using a curette. The foul discharge is a safe guide for its use, but when absent a culture should be taken from the interior of the uterus. During the growth of the culture, which takes from twelve to twenty-four hours, the patient should be treated on general principles. In infections resulting from lacerations of the vulva, vagina, and cervix, the curette does harm in that it is likely to spread the infection into the uterus.

Higgins¹ reports 38 cases of puerperal infection treated in the gynecological wards of the Boston City Hospital during the year 1900. Eleven cases were the result of abortions, and 27 were developed in cases delivered after the seventh month. In the 38 cases there were 16 deaths, a mortality of 42 per cent. The writer says this mortality, however, is of no practical value in judging the general death-rate from puerperal infection, because only the very worst cases are sent to the hospital. The general death-rate in all cases of puerperal septicæmia is estimated at 25 per cent.

Three of the fatal cases were moribund on admission and survived only a few hours. A number of others entered the hospital after prolonged illness and survived only a few days. Three cases were complicated by septic pneumonia, 3 by endocarditis, 2 by mania, and 1 by phlegmasia dolens of both legs and purpura.

The antistreptococcus serum was used in 5 of these cases; 1 recovered. The writer regards the serum as very depressing on the patients, its use attended with danger, and should only be used in the most serious cases, and only with great care and in moderate doses.

Of the 22 cases which recovered, the majority had severe infection, but, as a rule, there were no severe complications and they made a good convalescence. Two developed salpingitis, and there were undoubtedly others who developed pelvic troubles, but these symptoms did not present themselves while they were in the hospital. The writer observes that each year patients enter the gynecological wards for treatment whose trouble can be directly traced to a septic puerperium or an

¹ Medical and Surgical Reports of the Boston City Hospital, 1901.

abortion. Among the septic cases there were found numerous fresh tears of the cervix, which led him to believe that this was the avenue of infection in many patients. No regular treatment was carried out as a matter of routine. It is believed that if the infection has not extended beyond the endometrium, if the uterus is large and soft, and there are retained products with a foul discharge, curettage is of marked benefit, for it removes the seat of infection, the decomposing material, and favors involution.

Many cases, the writer says, are promptly curetted immediately on entrance into the hospital, and it is believed that by this treatment many cases of sepsis are headed off. When there are no retained products, and the uterus is hard and well contracted, curetting is contra-indicated, as in this condition it is probable that there has been direct absorption of the infection from the placental site or from the cervical or vaginal tears.

It is generally unnecessary to use anaesthesia in curettage, as it causes little pain and no shock. After curettage, and in certain cases where it has not been performed, intra-uterine douching with large quantities of weak bichloride and normal salt solution twice daily has been employed; the normal saline seems to be as efficacious as the bichloride. From marked results in the treatment of several cases of old sinuses which had resisted all other treatment, the writer was led to use formalin in $\frac{1}{2}$ per cent. to 1 per cent. solutions in intra-uterine douching, with apparently good results. Many methods proposed for the treatment of puerperal infection have been tried in the hospital, but none have given more success than those given here. Hysterectomy in the treatment has not as yet been done. The writer regards the subcutaneous injection of normal salt solution, which has been reported as curative in several cases, as a stimulant of limited usefulness.

Antistreptococcus Serum in Puerperal Fever. Blumberg¹ used Marmorek's antistreptococcus serum in a series of 12 cases of puerperal fever in the clinic of the University of Leipzig. The cases were severe, fever had been of long duration, and had shown no tendency to abate. The result makes it seem probable that the serum is of benefit, especially when the fever is due to a pure streptococcic infection. In 2 such cases the patients recovered; 1 had had a temperature up to 40° C. and above for two and one-half days. After receiving 20 grammes of the serum her temperature became normal and remained so for two days. It then rose to 40.4° C. in the rectum, but on the further administration of serum fell to normal again and remained there. He noted as complications of the injections, urticaria, erythema,

¹ Berliner klin. Wochenschrift, 1901.

and general and local exanthemata. The local eruptions can be avoided if care is taken to inject the serum entirely into the subcutaneous tissue, and not into the skin.

With our present knowledge of the dangers and the results of the serum treatment, it is my conviction that it should never be employed except after a bacteriological examination of the uterine contents has demonstrated a pure streptococcus infection, and when the patient is not overwhelmed with a fatal dose of poison.

An Experimental Investigation of Puerperal Pyæmia. Gärtner¹ experimented upon dogs to prove that puerperal pyæmia is due solely to infective thrombi, and that there may be different varieties of the infecting bacteria. The jugular veins of the dogs were opened and a cotton wick infected with a known bacterial culture introduced. This resulted in thrombosis, with phlebitis and pyæmia following.

He determined that it made no difference whether staphylococci or streptococci were used singly or in mixed infection upon the wicks. In 18 cases there was produced uniformly pyæmia, with its characteristic symptoms: phlebitis, suppuration in the neighboring tissues, embolic abscesses in the submaxillary and parotid regions, in the cerebrum, with general blood poisoning and death of the animals. The intensity of the pyæmia depended upon: 1. The local source of the cocci (staphylococci from carbuncle pus and streptococci from erysipelas proved the most virulent, no matter how many passages of their cultivation they experienced). 2. The duration of the preservation of the completed artificial thrombi before their insertion into a vein (the longer staphylococci were kept in a dry state the greater the loss of their virulence, no matter how virulent they were at the first examination).

Surgical Treatment of Puerperal Pyæmia. Trendelenburg² enters into a discussion of the various forms of pyæmia, but more particularly the puerperal form. He discusses the difficulties of its diagnosis, its comparative frequency, and the difficulty in differentiating it from other forms of puerperal infection.

Its frequency is attested by the occurrence of pyæmic thrombosis in 21 cases of 43 sections of women who died from puerperal infection.

It is more difficult to treat surgically than a thrombosis of the transverse sinus, because the location of the thrombosis cannot be so easily and definitely determined. It may be in the hypogastric vein, or the ovarian vein, or both, and one or both sides may be involved. The history of a patient is given. She had aborted in the second month of

¹ American Journal of the Medical Sciences, 1902, vol. cxxiii.

² Münchener med. Wochenschrift, April 1, 1902.

her pregnancy, August 31, 1901. She was not well from that time until September 16th, when upon examination a diagnosis of a pyosalpinx was made, most probably of septic origin. September 19th it was drained by the vaginal route and streptococci were found in the pus.

As there was no improvement, a resection and ligation of the right hypogastric vein was done. She was somewhat better after this, but in ten days the chills recurred, increasing in frequency and severity until November 12th. At this time an incision was made from the eleventh rib backward, the ovarian vein dissected out, and a portion 5 centimetres in length, containing a grayish-yellow thrombus, was ligated and excised.

Her condition after this improved slowly, the chills gradually were less in frequency and severity, and in about two weeks had entirely ceased. About sixteen days after the removal of the thrombus from the ovarian vein, a metastatic, subcutaneous abscess in the region of the shoulder-blade was opened and drained. There were no further complications, and in three weeks she left the hospital entirely well. The author cites this as the first case of puerperal pyæmia cured by resection and ligation of the veins, and expresses the hope that not only the chronic but also the acute forms of puerperal pyæmia will in the future be successfully treated by surgical procedures.

Gangrene of the Uterus in the Puerperium (Metritis Dessicans). Zaborowski¹ has reported a case of this disease, which was first described by Syromiatinkow, in 1881, as "metritis dessicans." He reports 41 cases published since then (1881). In his own case—a young primipara—fever, rigors, and urticaria set in six days after delivery; abdominal swelling then appeared accompanied by a fetid vaginal discharge. After one month she was curetted and a perforation was found in the posterior uterine wall; a hysterectomy was then done and she fully recovered. Metritis dessicans may appear with a well-defined line of demarcation, or this may be absent; when the latter is the case the whole inner aspect of the uterus is invaded. Young women are most subject to it, and especially when they are subject to general disorders or when labor is tedious and obstetrical interference is required.

The clinical features are well portrayed in his own case. In some cases the uterus contracts and expels sloughed off portions of the mucosa and muscular tissues. At times the whole mucosa is expelled, the too free use of strong cauterizing agents being responsible for this. A complete cure is rare, as the uterus is much damaged. The mortality is 32 per cent., and in bad cases hysterectomy affords the only possible chance for recovery.

¹ *Gazeta Lekarska*, 1901, Nos. 1-3.

Von Fraugué¹ observed this condition in a patient. She had repeatedly been pregnant, and in this instance had aborted at the second month. The products of conception lay in the cervical canal, and were removed, the uterus being curetted with the finger-nail and afterward douched. The temperature rose and continued up for three weeks, when a tender swelling was detected on the left border of the uterus; this simulated a tubal abscess. One week later, after a rigor, pus escaped freely from the vagina, but the patient continued ill and feverish for six weeks. For about six weeks longer she seemed all but well, when quite suddenly a slough of the inner wall of the uterus came away. This was just four months after the abortion, and complete recovery soon followed. Metritis dëssicans is rare following abortion, as it is generally seen following prolonged or instrumental labors. Traumatism from hands or instruments and endometritis and other morbid processes occurring during pregnancy have been noted as causes.

The determining cause is the infection of a uterus whose tissues have not sufficient vitality to resist it. The streptococcus is found in the sloughed tissues and the thrombosed uterine vessels. The symptoms are feverishness after a bad labor, fetid and purulent lochia, and an ultimate discharge of the necrosed portion of the uterine wall. This pathognomonic symptom has been observed from the fifth to the seventh day. In this case as reported the slough came away much later. Recovery after the sloughing is usually the result, but in some cases, where the uterine wall has been perforated, peritonitis followed, resulting in death. A utero-intestinal fistula is also a usual result. Beckman places the mortality at 27.5 per cent. The cavity of the uterus in cases that recover is generally more or less obliterated. Uterine injections are to be avoided and expectant treatment alone applied.

Localized Œdema in Puerperal Infection. Budin² discusses the localized and irregular areas of œdema which appear on different parts of the body after the beginning of an attack of puerperal sepsis. The chief interest centring in this condition is that it may be mistaken for phlegmasia dolens when it affects the lower extremities. It is frequently seen in the lower extremities, but there is no plugging of the veins or deep general œdema, as in phlegmasia. The writer relates the history of a case in which chills occurred on the fourth day of the puerperium, and the patient was curetted. About three weeks later there was œdema of the right foot and thigh, which disappeared very irregularly. The following week the left foot and leg were similarly

¹ Sammlung klin. Vorträge, 1901, No. 316.

² Bull. de la Soc. d'Obstet. de Paris, January 16, 1901.

affected. The entire œdema disappeared about one week later and the patient made a good recovery. Another case the writer attended had post-partum hemorrhage. She had previously been much weakened by the bleeding during labor. In about three weeks œdema of the lower extremities developed. There was not the pain which is present in phlegmasia, and the limbs could be moved about. Perret has also reported a similar case. Septic infection had occurred in this case, and about four weeks later œdema of the lower extremities developed. There was no pain, and recovery followed in a few days.

Budin relates 1 case in which a deep abscess was suspected. The patient had developed grave symptoms of sepsis a few days after labor; marked œdema occurred on the left side of the abdomen low down and in the left thigh. No trace of an exudate about the uterus could be found, so no operation was performed. The œdema disappeared in a few days without any incision having been made for its relief. The patient's general condition, however, was so bad that she died suddenly. Another case, in which a piece of adherent placenta had been removed, developed œdema of the left groin and thigh a few days afterward.

The septic symptoms due to the retained placenta disappeared at once upon its removal, yet the œdema followed. A consultation was held. One of the consultants believed that an abscess was present and an immediate operation was necessary, but several others, among them Budin, dissented, and an operation was refused. In a few days the œdema had entirely disappeared, and the patient subsequently made a complete recovery.

Puerperal Insanity. Robert Jones¹ gives this subject thorough consideration, and presents many statistics in support of his views. He believes that gestation is attended with much nervous disturbance in many, and some nervous disturbance in all women. The intimate sympathetic connection of the mammæ with the gravid uterus gives rise in normal persons to various forms of neuralgia, severe headaches, dizziness, and insomnia. Whereas, in highly susceptible persons these changes of disposition and character become so marked that irritability, fractiousness and despondency may and do amount to actual insanity. Although this period of life is less liable to insanity than any other, it does actually occur about once in every 700 confinements. His observations represent 3500 cases. Out of these, 259 cases were admitted with insanity, for which pregnancy, confinement, the puerperal state, or lactation was assigned as a cause, a percentage of 7.4; 56 were from pregnancy, a proportion of 21.62 per cent.; 120 occurred during the

¹ British Medical Journal, March 8 and 15, 1902.

puerperium, a proportion of 46.33 per cent. ; 83 occurred during lactation, a proportion of 32.43 per cent. Of the 259 cases, 60 per cent. were married women suffering from a first attack ; 25 per cent. were married women who had had previous attacks. In single women the causes were weakmindedness, with weakened emotional inhibition, unable, therefore, to restrain their passion, and thus were more readily tempted. Single and married women suffered in about equal proportion from melancholia and mania, but the acute form of melancholia was more intense than that of mania. In single women insanity was of a particularly unfavorable form. He was unable to bear out the statement that insanity was more common when the child was a male. In the writer's cases, of 44 the sexes were equally divided. Of the 120 puerperal cases, more suffered from mania than from melancholia, and again more from acute mania than from acute melancholia.

Of 83 lactational cases more suffered from melancholia than from mania. The onset of the puerperal cases was more often acute, and the gradual onset characterized the advent of melancholia twice as often as mania. The nearer the insanity is to the confinement in point of time, the more acute the symptoms. When melancholia develops gradually, the termination is more often in dementia. In the melancholia cases there is great tendency to wander away from home ; 102 cases had a sudden onset, of these 68 recovered and 34 died or became chronic, a proportion of two to one ; 155 cases with a gradual onset only 87 recovered and 68 became chronic or died, a proportion of recoveries of eight to seven.

Of those resident and chronic and of those that died over 50 per cent. had a gradual onset of insanity. In 83 lactation cases the onset was equally frequent between the second and third month, and the first and second years, and was gradual in over 68 per cent.

The onset next most frequent was between the third and fourth months, and then between the fourth and fifth and sixth and seventh months. In these it was more often gradual than sudden. The strain during the last months of pregnancy, and immediately before parturition is more likely to unbalance a mentally unstable woman than that attending the early changes of pregnancy. This applies equally to the married and unmarried.

In puerperal mania, 48 out of 120 cases occurred within the first two weeks, one-third of them occurring the first week. In 58 per cent. of the 120 cases the first symptoms occurred within the first three weeks after confinement. The almost universal early symptom in puerperal cases is loss of sleep ; this is followed by a feverish and anxious restlessness, a busy concern about trivial details, distrust, suspiciousness, loss of appetite, offence taken when none was meant, an

exacting irritability and ready reaction to outward stimulus, culminating in wild delirious excitement, and mania. Sleeplessness and headache, followed by an indefinable feeling of apprehensiveness in puerperal women of hereditary nervous instability, or any sudden unaccustomed stimulus of however slight a nature, tends to and may presage a mental breakdown. For this reason early attention should be given to sleeplessness and headache. In puerperal women the anxious expectancy of the latter months of pregnancy, followed by the subsequent exhaustion of parturition, causes this period to be one of unusual anxiety even in normal women. Suicidal promptings were most common in the lactation cases (47 per cent.).

In the insanity of pregnancy they occurred in 41 per cent. In the puerperal cases in only 21 per cent. Infanticidal promptings were also relatively more common in the lactation cases and in married than in single women. These were present in 14 per cent. of all cases of lactation, and in only 10 per cent. of puerperal cases. Several cases in each variety of insanity, however, were careless and neglectful, and were described as having lost their love for their children. Delusions are not uncommon. It is during the early puerperal period that care should be rigidly exercised to avoid sudden excitement, to procure sleep, and to sustain the organs in a healthy nutritive state during the process of restoration. As to hallucinations of the senses, those of hearing were six times as common as any other; few had hallucinations of smell, touch, or taste.

Marked sexual and religious excitement are often developed. As Havelock Ellis states, religion, like modesty, consists in the repression of natural impulses, and a certain reticence and restraint are characteristic of what is best in religion, art, and life. When the proper balance between certain definite restraint and impulse is disturbed, as occurs particularly in this form of insanity, those marked symptoms of sexual and religious exaltation are manifested with painful prominence. The gibberish nonsense, erotic, immodest conduct and bad language, the evolutions of shameless indecency, accompanied with noisy delirium and marked religious exaltation, with purposeless restlessness, sum up the insanity of the puerperal period. And this form he regards as a distinct type of nosological entity.

In the insanity of pregnancy and lactation, his experience teaches that there are no general characteristic symptoms of these periods. In the pregnancy cases no unanimity of opinion other than that the third stage of labor in the insane is, perhaps, precipitate, can be obtained. Many of the infants did not long survive birth, and insanity he considers is very unfavorable to the life of the offspring. He has never met with insanity during conception, though it has been stated as so

occurring. A transient insanity during delivery he has not seen, they strictly coming under the observance of the obstetrician. They are of great medico-legal interest in view of unexpected and occasional tragic occurrences. Of the 259 cases, 129 had some hereditary disposition.

Of the 120 puerperal cases, 50 per cent. had a faulty heredity ; this was direct maternal oftener than paternal.

Of the 83 lactation cases, 58 were first attacks, and 23 of these had a hereditary history, direct maternal heredity being twice as common as paternal. In the 56 pregnancy insanities, 82 per cent. had a hereditary history, but there was no marked difference in the maternal and paternal heredity. Of the 56 cases, 14 were first attacks, with a percentage heredity of 57. Attention should be concentrated upon the baneful influence of an evil heredity, for it is impossible to qualify that great biological law according to which all beings endowed with life tend to repeat the elements and functions of their organism in their descendants.

The insanity of pregnancy and that of the puerperal period occurred most frequently between the ages of twenty-five and twenty-nine years, while that of lactation occurred between the ages of thirty and thirty-four years, which fact supports the view that this latter is closely related to exhaustion, and occurs most commonly immediately after the best period in life—that under thirty years. Of insanity in pregnant women, 26 per cent. occurred in unmarried women. Only three single women out of 83 cases suffered from the insanity of lactation, which is probably due to the fact that few illegitimate children are allowed to nurse from their mother's breast. Of the insanity during the lactation and the strictly puerperal period, 4 per cent. and 12 per cent., respectively, occurred in single women ; 14 per cent. and 12 per cent., respectively, occurred with the first child, and between the ages of thirty-five and forty-five years. This fact agrees with the generally accepted statement that when pregnancy and parturition occur beyond the age at which restoration and recuperation naturally occur, the great outlay and exhaustion consequent thereon are more likely to act as the breaking strain. Most patients had brown hair and brown or gray eyes. Two had red hair, several had fair hair, while very few had dark hair. Brown hair with hazel or gray eyes greatly predominated ; brown and gray eyes were also noted.

Puerperal insanity is considered to be the most easily recovered from, and hospital treatment is probably better than treatment in the home. The prognosis of that form occurring in early pregnancy is favorable ; that in later gestation is apt to continue in an exaggerated degree until after confinement and during the puerperal period, and

may become chronic. Most puerperal cases get rapidly well, but cases of acute mania on admission have passed into acute dementia. In his experience this form of insanity, contrary to general teaching, showed numerous and frequent relapses. Insanity during lactation tends to get rapidly well, but may be complicated with low forms of inflammatory disease and low nutritive states. Albuminuria is not common in puerperal insanity; when it occurs the prognosis is grave. A return of menstruation is a satisfactory symptom. The insanity of pregnancy rarely passes off before confinement; 75 per cent. to 80 per cent. of puerperal and 80 per cent. of lactational cases recover. The death-rate is highest among the insanities of pregnancy and lowest among the puerperal cases.

Concerning the pathology, it is desirable, if possible, to distinguish the form of brain affection which is due to pregnancy and the puerperal period, including lactation, from that which occurs independently of the bodily condition under consideration. The form of insanity which characterized the cases of pregnancy was mainly melancholia, which was more marked than the acuteness of mania. Bevan Lewis states that fundamentally distinct as these two states of melancholia and mania appear to be, the process of reduction is the same in both. What the nature of the process which causes so great a transformation in the mind of the pregnant woman may be is not definitely known.

In those cases occurring after confinement, the morbid and effete material taken into the maternal circulation during early uterine involution tend to produce in the predisposed a profound irritation of the nervous system, especially if the excretory organs are not acting freely. This is the important stage of septic infection where saprophytic bacilli gain entrance into the blood, and either themselves multiply in the blood, giving rise to general septicæmia and pyæmia, or produce general toxæmia through the formation of poisonous chemical substances. Whether saprophytic bacilli have pathogenic potency depends possibly upon the vital resistance of the blood and tissues. It is uncertain and improbable that all forms of puerperal insanity are due to the presence of bacterial poison, although unquestionably some are of septic origin. There is no doubt, however, judging from the analogy of poisons, that some morbid material circulating in the blood is able to cause disordered energy in the cerebral cortex with consequent mental aberration. In regard to lactational insanity, the great drain upon the mothers, who for any reason continue this period for months longer than necessary, entails acute bodily exhaustion, which in part causes her mental breakdown. Statistics of insanity in the rich and poor during this period support this view, as does also the prevalence of deaths from pneumonia with gangrene of

the lungs and phthisis, the latter causing about 24 per cent. of deaths in this class. As to treatment: No medicinal agents can relieve a disordered mind except indirectly through the disorder of the body with which it is connected. The treatment must depend upon the stage, whether: 1. Pregnancy. 2. Childbirth. 3. Puerperal.

Abortion has been recommended in insanity occurring early in pregnancy, but Jones thinks, with the exceptions of convulsions or uncontrollable vomiting, it has little to recommend it. This form of insanity is generally a recoverable one, and the symptoms pass off either toward the end of pregnancy or soon after confinement.

Asylum treatment is considered best except in those well-to-do patients who can secure all it affords in their own homes. The general treatment consists in a light dietary, gentle exercise, bright surroundings, saline aperients, mild hypnotics for sleep, as a combination of chloral and bromides. Complications arising should be treated upon the principles of obstetrical practice. Insanity occurring after the puerperium needs more special local and general treatment. This is the most recoverable form, and well-to-do patients if suffering from a first attack should not be sent away from home within the first six weeks after the onset. At the same time this is one of the most difficult forms to deal with, owing to the emotional disturbance and the tendency to infanticide and suicide. For the mania the wet pack has been successfully used. Electric baths and constant immersion in water at 100° F. did some good; the latter had to be given up on account of the patient's struggling. No form of insanity so well pays generous treatment, and the free administration of liquid easily assimilable is a necessity. The essence of general treatment is compulsory supralimentation. Food should be given during every quiet interval and at each opportunity, as the exhaustion from this form of acute delirious mania is intense. Alcoholic stimulants seem to be absolutely necessary in these cases. In about 25 per cent. of cases he uses the nasal feeding-tube for puerperal and lactation cases. Eggs, beef-tea, milk, malt liquor, malt extract, and cod-liver oil are given, and the patient during puerperal mania can bear free doses of calomel, podophyllin, jalap, or croton oil, frequently repeated. Sleep must be obtained, but opium and morphine are to be avoided. Sulphonal is used when there is much motor excitement. Paraldehyde is satisfactory, but chloral and bromide are even more so.

The headaches which often accompany the sleeplessness are successfully treated by antipyrin and potassium bromide, while iron, strychnine, and digitalis are used in the late stages of involution. The return of the senses is encouraging, and means to bring this about should not be neglected. Relapses frequently occur during convales-

cence. At times after prolonged mania, a dull, listless, semistupor is developed which requires a special effort to overcome. At this time a change is beneficial, to the home if the patient has been treated in a hospital, and *vice versa*. If this be neglected an incurable dementia is liable to set in and become progressive. Local vaginal and uterine conditions should be looked after, and the breasts need special attention. No good resulted from antistreptococcus serum. Thyroid extract produced marked physical reaction, but no mental benefit. With regard to stimulants, Jones has seen cases admitted during lactation as the result of their indiscriminate administration, another instance of the abuse of good and powerful remedies. He believes insanity due to two factors: stress and heredity, and the greater the inherited vital resistance of the tissues the greater will be the strain required to overcome it. Our duty is to increase this resistance against selective toxins.

Deciduoma Malignum. Ladinski¹ says that there is yet considerable uncertainty as to the true pathogenesis of this disease. We have a growth which, according to the opinions of various writers, is either a sarcoma or carcinoma, or a combination of both, and which may be derived from the maternal or foetal structures or from both. It seems that the term deciduoma malignum first proposed by Säger is the most appropriate. Clinically the disease presents a clear and distinct picture; the signs, symptoms, and course of the disease, as based on a careful analysis of the histories of the cases heretofore recorded, are characteristic and unmistakable. The chief symptoms clinically are:

1. Pregnancy; it is an absolute concomitancy or precursory condition of deciduoma malignum.

2. Hemorrhage is almost invariably present and is usually the first symptom which attracts attention. It appears without apparent cause, and is very characteristic because of its extreme irregularity as to frequency, duration, and quantity. The hemorrhage does not respond to the usual means of treatment, and in the intervals of the hemorrhages there is usually a serous discharge.

3. The uterus is usually enlarged and soft with the feel of a chronic hyperplasia, and the os is usually patulous.

4. Pelvic pain.

5. Anæmia, followed by marked loss of flesh and strength, and finally distinct cachexia.

6. The growth begins as one or more minute, dark-colored, or reddish granules, and springs from the endometrium, gradually spreading in all directions. There is no sharp line of demarcation at its periphery, and it is soft, spongy, friable, and bleeds very profusely on touch.

¹ American Journal of Obstetrics, April, 1902.

7. Proneness to early metastasis, most frequently in the vagina and lungs. The metastatic deposits consist of the same elements as the primary, and frequently exceed it in size. Cough and bloody expectoration are regarded as important symptoms in metastasis to the lungs.

Diagnosis. The writer emphasizes the fact that, much more so than incipient carcinoma of the uterus, the microscopic diagnosis should not be solely depended upon for a diagnosis, but particular attention should be paid to the clinical signs and symptoms. It is the most fatal of all neoplasms, because of its very rapid development and exceeding proneness to early metastasis and recurrence.

Treatment. Considering the rapid progress of the disease, the treatment should consist of complete extirpation of the uterus and of vaginal metastases, if present, as soon as the diagnosis is made from the clinical signs or histological examination. Any measure short of this will only aggravate the condition. Extirpation should be done even in the suspected presence of metastatic deposits in other parts of the body; for in a few cases the secondary deposits disappeared after the primary tumor was removed. As the only hope of cure in this disease depends on the early recognition and prompt surgical treatment, the uterus of every patient whose history is in the least suspicious should be subjected to a curettage for microscopic examination, and to a thorough digital exploration, at the earliest opportunity.

A history is given in detail of a patient of the writer's, and a list of 132 authentic cases is appended.

Fortesque¹ urges the same prompt treatment, and advises removal of the uterus together with all diseased structures that can be removed, as soon as the diagnosis can be made. The appearance of symptoms pointing to secondary deposits is not always followed by death, and, therefore, must not be held to contraindicate operative treatment. Repeated curettings cannot be too severely deprecated. Many recorded cases are a warning against indecision and delay. More care than ever should be used in clearing away ovuline structures from the uterus after labor and abortion. Every woman who has a hydatid mole should be carefully watched for a year at least after the event. This holds good, particularly in the case of women between the ages of twenty and thirty years, for it is at this age the hydatid mole most often brings malignant tumor in its train.

This relationship between deciduoma malignum and hydatid mole has repeatedly been noted.

Metoz² collected 98 recorded cases of the former, 48 of which followed the latter. He also urges that every uterus which has been the

¹ Medical Chronicle, July, 1901.

² Thèse de Paris, 1900-1901, No. 69.

seat of an hydatid mole, be most carefully looked after. He advises the treatment as employed by Bonnaire. Remove the mole very gently with a blunt curette, and wash out the uterus with a solution of iodine. Insert a strip of iodoform gauze to prevent secondary hemorrhage or infection from the sloughing of any of the debris of the mole.

This dressing is renewed every day for ten days, when the uterus is curetted with a special curette devised by Bonnaire himself. It is neither sharp nor blunt, but has an edge like the face of a file. Having thoroughly curetted, he washes out the uterus with an iodine or permanganate solution, cauterizes it with a solution of glycerine of creosote, or one-eighth solution of zinc chloride, and packs the cavity with iodoform gauze. Five or six dressings follow about two days apart, observing the patient closely to interfere promptly should it be necessary.

THE NEWBORN INFANT.

The Premature Infant. The age of viability cannot be definitely stated, as it is very variable, depending to a certain extent upon the mother's previous condition.

The care of such infants, including the furnishing of the proper surroundings and food has been a task which has exerted to the utmost the resources and ingenuity of the physician. The conditions it was subject to in its mother's womb must be supplied, as nearly as possible, until the time its normal birth would have occurred. Great advances have been made in this direction during the last few years, and it is safe to say that a premature infant's chances for life are now much better than formerly.

Ballantyne¹ has so thoroughly studied and discussed this subject that his views are well worth noting. In discussing the subject he takes as his type of prematurity the infant expelled from the uterus at the seventh month of intra-uterine life, since the difficulties and dangers of such an infant may be regarded as the average difficulties and dangers of prematurity. He says it is born with the skin, skeleton, and organs of a seven months' fetus, and is called upon to play the part of a newborn infant, with the personalia of a fetus. In too many cases there is a defective adjustment of capabilities to requirements; this is almost inevitable, for the requirements are exacting and the capabilities inefficient; it may then escape death only to carry a debility with it, which projects a baneful influence far into its postnatal life. The problem is one of adaptation, of utilization, of manifestly imperfect powers to obtain results which are not easily to be obtained. Upon the obstet-

¹ British Medical Journal, May 17, 1902.

rician falls the responsibility of aiding the prematurely born child in the struggle with the exigencies of its new environment. The more thoroughly he understands the problem, the more effective will his management of it prove.

VARIABILITY OF VIABILITY. It is very difficult to fix the uterine age at which viability may be said to be acquired ; consequently, when one speaks of a premature infant born at the seventh month of pregnancy, one can only mean that the maternal symptoms and the physical examination of the mother and the infant pointed to that as the most probable date. Neither foetal size nor weight can be regarded as sure indications of foetal age. Another difficulty lies in the fact that the maternal health during pregnancy has an influence upon the viability of the infant. Therefore, the viability will vary with the state of health of the parents. It is a fact of prime importance to bear in mind that the age of viability is not a fixed but a variable date.

ANATOMY OF THE PREMATURE INFANT. The weight varies from three and one-half to four pounds, and the length is about sixteen inches. The skin is delicate, almost transparent, but has lost that bright-red color of earlier foetal life. The face has a somewhat senile look, and the outlines of the limbs and trunk are sharp, not rounded. The lanugo covers the extensor surfaces of the limbs, face, and back, and there is some hair on the scalp.

The nails are quite thin and do not project beyond the finger-tips. The cranial sutures and fontanelles are large and wide. In the male, the testicles will probably be found in the scrotum ; a certain proportion of cases, however, will have one undescended. In the female the undeveloped state of the external genitalia will give to the vulva a gaping appearance. On dissection the ossific nuclei are absolutely and relatively smaller in the premature infant. The gray and white matter of the brain cannot be differentiated, and the island of Reil is still exposed to view.

The foramen of the heart is still wide open and the ductus arteriosus patent. The kidneys are distinctly lobulated, and the suprarenals and thymus are relatively large. The lungs are partly atelectatic. The premature infant is a fetus lacking the placenta, membranes, and liquor amnii, which go to make up the foetal adnexa. Immediately after birth it loses another foetal covering, the vernix caseosa.

PHYSIOLOGY. Physiologically the premature infant is partly a fetus and partly a newborn child. Foetal physiology is seen endeavoring to cope with neonatal surroundings, but neonatal physiology is also seen hampered in its action by persistent foetal conditions. In the premature infant the immediate postnatal loss of heat is great, the

temperature falling to a very low level, and may remain there for a comparatively long time.

Among the causes for this are the defective action of the imperfectly expanded lungs, the absence of the thick layer of subcutaneous tissue which is found in the full-term infant, and the feeble metabolism which is going on in the organs and tissues of the premature child. The liver which in the foetus is busily forming blood and a little bile is suddenly called upon to form much bile and to continue its hæmatopoietic activities. The most active area of blood circulation—the placental—is at once cut off from the heart and that organ is required to send a specially large supply to the lungs.

Through the tendency of the foramen ovale and ductus arteriosus to remain patent longer than is normal in the full-term infant, the complete separation of the two currents of blood in the heart and throughout the body is not accomplished.

With regard to digestion, all the digestive agents are present in small quantity, but they often fail in the more exacting demands resulting from the ingestion of milk by the premature infant.

The dry mouth, weak digestion, and frequency of gastro-intestinal disorders in the prematurely born are matters of every-day observation.

Modern research upon the problems of foetal physiology goes to show that in the last trimester there is a functional activity peculiar to the period, an activity which differs distinctly from that which has characterized the middle trimester. Fibrous changes are occurring in the chorionic villi, changes which prepare the way for the replacement of the placental activity by that of the various intracorporeal organs of the foetus. The kidneys are changing, but of more importance are the alterations in the transplacental interchanges.

PLACENTAL FUNCTIONS. It is apparently a fact that the matrifugal stream carries more leucocytes to the foetus than the matrapetal brings back. Some of them must be retained in the tissues of the unborn infant. There is a great fixation of minerals in the last trimester of pregnancy, iron is being stored up, with a corresponding decrease in the maternal reserve. There also appears to be a great transference of potash salts from mother to foetus; there is also a flush of lime through the placenta in the last weeks, but this is not accompanied by a corresponding increase in the phosphorus transmitted; this apparently has been transmitted previously.

All these observations support the belief that the placenta has great selective powers and is not the simple transmitting organ that it has often been supposed to be.

The peculiarities of the transplacental interchanges of the last three months of intra-uterine life would seem to be specially associated with

the formation of red blood corpuscles, of striped muscle, and of bone. The consequences of the loss of the latter months of intra-uterine life are plainly manifest during, at, and immediately after birth. Nature is not allowed time enough to prepare for the sudden changes from a semiparasitic life inside the uterus to a more or less independent one outside.

PATHOLOGY. The premature infant here stands midway between the fœtus and the newborn child, and the result of this combination in the premature infant is greatly increased morbidity and mortality. The premature infant is liable to infection by the umbilicus. It is specially liable to attacks of thrush, of diarrhœa, and of dyspepsia. The premature infant is like the fœtus in the small degree of resistance it offers to pathological organisms when they once gain entrance into its body.

MANAGEMENT OF THE PREMATURE INFANT. The three leading principles are: 1. To prolong the most useful and best features of fœtal life after birth. 2. To supply some of the features which cannot be prolonged. 3. To awaken and strengthen the dormant or inefficient functions peculiar to postnatal existence.

In the first consideration, the incubator as it has been perfected, meets in a fairly satisfactory way many of the requirements, and is a satisfactory method of maintaining the temperature of the child, and thus prevents one of the great dangers of hypothermy.

Some of the features of fœtal life cannot be imitated, especially those due to the presence and activity of the placenta. Some of the placental functions are performed by the awakened organs of the infant, but others cannot be carried out. For instance, the function of preventing the ingress of germs cannot be done efficiently. The best that can be done is to render the incubator as nearly aseptic as may be.

If the infant is capable of nursing from its mother's breasts, its chances of survival are much better; and in those unable to suck, "gavage" will often help to save life.

The milk of the mother or a wet-nurse will make up for the loss which the infant undergoes by premature birth. Human milk, however, is deficient in iron, so that theoretically the administration of iron is justified. Jones gave it in the form of liquor ferri peptonatus, in doses of 5 minims t. i. d., in a little water, between nursings. While his experience has been limited, it has caused no gastric or other disturbance, and has not appeared to do any harm. If human milk is not to be had, modified cow's milk, not to exceed four teaspoonfuls at a time, and at intervals not longer than one and one-half hours, should be given. Iron would seem to be indicated in these cases. The infant should be kept in the dark the greater part of the time. Treatment should also aim at awakening the dormant functions, especially the

pulmonary respiration. The Schultze swinging movements are not applicable for premature infants, as they increase evaporation from the skin and chilling may be traumatic. Alternate flexing and extending of the trunk of the child as it lies upon the palms of the obstetrician's hands is recommended. The infant should be wrapped in cotton wadding while this is being done. The inhalation of oxygen has not been especially successful, since the infant's tissues lack the power of combining with it.

Treatment of the Stump of the Umbilical Cord. The frequent discussion and the importance of the proper method of treating the stump of the umbilical cord led the *New York Medical Journal* to propound the question: "What is the best way of treating the stump of the umbilical cord?" in its list of prize questions. The following treatment, given in the issue of June 22, 1901, was awarded first prize:

Do not cut the cord until pulsation has ceased. After beating has ceased, recleanse the hands and clamp the cord two inches from the abdomen with artery forceps. Tie to the proximal side with narrow tape. Loosen the clamp, and if there is any oozing cauterize with pure carbolic, the Paquelin cautery, or, if prejudiced against the cautery, use aqueous solution of suprarenal extract. Make a thin pad of sterilized gauze, six or eight inches square, of several thicknesses. Cut a hole in the centre of the pad, place it on the child's abdomen, and draw the cord through. Surround the stump with sterilized cotton and over it place another gauze pad corresponding to the one underneath. If the gauze irritates the skin apply a little lycopodium or zinc stearate. The dressing is held in place by a few turns of a gauze bandage. Change the dressing every other day, and when the stump has become separated from the abdomen, discontinue the dressing and substitute a firm binder. The binder should be removed during the daily bath, which now includes the umbilical region. When obstinate hemorrhage of the umbilicus persists there is but one decisive treatment: A strong silk suture is passed by a curved needle into the abdominal wall at one side of the umbilicus and brought out at the opposite. It should include the edge of both recti muscles and be tied over the navel. A similar suture is passed at right angles to the first. This is effective. It should be covered with a dry dressing of boric acid and removed on the fourth or fifth day.

Injuries of Birth. Injuries to the newborn child may be due to one of several causes, pelvic malformations, anomalies in labor with necessity for instrumental delivery, and careless or ignorant management.

These injuries may affect the external soft parts, the skull and other bones, or the brain and peripheral nerves. Their detection imme-

diately after birth is not always easy, but the serious results which may show themselves later in the infant's life demand that in cases of complicated labor especial care should be devoted to the early detection and treatment of any such injuries. Currier¹ has made a study of these injuries and classifies them into : (1) those received in natural labor, and (2) those received in artificial or assisted labor. They may involve : (1) parts external to the cranium, (2) the bones of the cranium, and (3) the structures within the cranium. The results may be : (1) immediate death, (2) death in a few days or months, (3) recovery with such injuries to skull and brain as to render full development mentally and physically impossible, or (4) in full recovery.

The cause of injuries in a natural labor is a disproportion between the foetal head and maternal pelvis. The head may be relatively large to the pelvic dimensions, even hydrocephalic ; the fontanelles may be small ; ossification may have progressed so far as to prevent overlapping of the bones of the head ; and the skull may be asymmetrical.

Causes in the pelvis may be due to a too prominent sacrovertebral angle or sacral promontory, caused either by an improper relation of the bones to each other, or by an outgrowth or exostoses at this point or elsewhere in the pelvis. The pelvis may be contracted, flat, or rachitic. It is a rare occurrence that the foetal skull is injured by a blow or fall sustained by the mother during pregnancy.

Injuries in an artificial labor may be unavoidable on account of the circumstances in a given case, or the result of carelessness, ignorance, or unskilfulness. In applications of the forceps to the foetal head above the pelvic brim there are probably more injuries and fatal accidents to the foetus than in any other operative procedure which is not intentionally destructive. Even with the head in the pelvic cavity and the forceps properly applied, the injuries to the foetal head from compression are numerous and often fatal.

Version, so useful when skilfully, and so fatal when unskilfully performed, or employed in unfavorable cases, also has its quota of injuries to the foetal head. In 29 cases of version, the frontal bone was fractured in 6. Attempts to rectify malpositions of the foetal head by hands or forceps may result in fracture or perforation of the bones of the foetal head or face.

TREATMENT. Little attention has been paid to this in the past, and it is probable many lives might have been saved in which injuries were overlooked or their gravity underestimated. In all cases of hard or protracted labor, the cranium should be carefully examined to detect any fracture, depression, or fissuring of the bones. If the infant's

¹ Medical News, August 3, 1901.

condition will warrant it, any treatment which may be necessary should be instituted as soon as possible after birth.

These injuries should be treated, as nearly as possible, as they would be at later periods in life, the same regard to detail holding in all cases.

The writer summarized his conclusions as follows from a study of over 60 cases in which the skull was injured during birth. Under indentations and depressions there were 5 of the right parietal, 9 of the left; 2 of the right frontal, 16 of the left; 1 of the right temporal, and 1 of the occipital and left parietal. The depressions varied from $\frac{1}{2}$ to 2 inches in length, and $\frac{1}{2}$ to $1\frac{1}{2}$ inches in depth, and $\frac{3}{4}$ to $1\frac{3}{4}$ inches wide.

In most cases the marks disappeared in a few weeks or months, but in others they remained for years. Seventeen cases had fractures of one or more bones; 1 case had marked dislocations of the facial and cranial bones. The bones were fissured in 5 cases, and in 5 cases there was laceration of the scalp. The brain was injured in 5 cases, and 4 cases were injured during foetal life.

Of the deliveries, 21 were forceps; 3 high forceps, and 3 versions. Three labors were precipitate; 7 were prolonged, the period varying from fifteen hours to six days, and 12 were normal; 23 cases had some variety of hemorrhage, while 6 had a tumor of the scalp. Of the abdominal presentations, 2 were breech, 1 face, arms, and cord, 2 post-occipital; 5 cases had coma, 6 had convulsions, 4 paralysis, 1 idiocy; 24 cases had some form of pelvic deformity.

Twenty-six cases died from various causes; 1 case was trephined and the bone elevated; in 3 others the scalp was merely opened and the bone elevated.

Duchenné's Obstetrical Paralysis. Among the injuries done to the child during birth Duchenné's obstetrical paralysis is not infrequently produced in delivering the arm in abnormal labors. A fracture of the clavicle or humerus is sometimes an accompaniment of this condition, but in the case reported by Stolper¹ there were no fractures present. His patient was a multipara and the presentation was vertex. The child was in the second position, and the head transverse in the pelvis. The child was delivered by the forceps, and it was necessary to make strong traction with marked internal rotation to deliver the shoulders on account of their great breadth. When the child was delivered there was a small mark on the forehead due to pressure; otherwise there was no sign of injury and the fingers could be spontaneously moved. The muscles involved in the paralysis were the deltoid, biceps, brachialis internus, infraspinatus, and supinator longus.

¹ Monatschr. f. Geburtshülfe u. Gynäk., Band xiv., Heft 1.

An X-ray photograph was taken of the arm, but no separation of the bones was found. Injuries to the brachial plexus occurs frequently in forceps deliveries, when there is incomplete flexion, especially in face presentations. The roots of the fifth and sixth cervical nerves are pressed against the vertebræ when a child is extracted by traction on the head, with strong pressure on the shoulder, or in a case where the arm is thrown upward and backward strong traction on the clavicle will produce the same result. The nerve roots are not torn, and the prognosis is uncertain, but is best in cases where forceps have been used. The treatment consists in the usual application of electricity and massage.

Asphyxia in Breech Presentations. In the management of a breech presentation, pressure upon the umbilical cord with consequent asphyxia of the child, is one of the dangers against which the obstetrician must be on his guard. The foetal heart sounds should be carefully watched from the time the breech enters the pelvis, and any irregularity is sufficient ground for interference.

When a breech labor is about to terminate, it is well to place the woman under ether to a partial degree, and have her brought into the lithotomy position; then, in case a more profound anaesthesia or interference becomes necessary, it can be done with the least possible loss of time and changing of position.

On the subject of the "Prevention of Asphyxia in Breech Presentations," Ord¹ reports his treatment of a case. The body of the child had been born when there occurred the usual hitch, and the head could not be delivered. Pulsation could be felt in the cord for a few moments, when it ceased. Ord happened to have a silver catheter in his obstetric bag; this he passed into the child's mouth. The child breathed through the catheter, the chest expanded, and the threatened asphyxia was avoided. He also inserted a female silver catheter to afford a greater supply of air; the head was born shortly afterward. The writer believed at first this method was original with himself, but subsequently found the method mentioned as unreliable in Playfair's work. In his case, however, the results were very satisfactory. Edwin Smith, in the same number of the *Lancet*, proposes that asphyxia of the after-coming head be prevented by passing a soft rubber tube about the size of a No. 8 or No. 9 rubber catheter into the child's mouth, having the end passed into the mouth protected so as to avoid injury to the soft parts.

Laborde's Method of Resuscitating the Newborn. The method of Laborde as applied to the resuscitation of the newborn is a method

¹ *Lancet*, September 21, 1901.

of considerable value, and next to mouth-to-mouth insufflation and the alternate hot and cold bath is to be relied upon. A very good description of this method and of its physiology is given by Franczak.¹ It consists in rhythmic traction of the tongue by the fingers protected with a thin cloth. In an infant the number of tractions should be about twenty-five to the minute.

The traction results in a reflex irritation, referred to the respiratory centre through the motions at the base of the tongue, the responding nerves being the superior laryngeal, the glossopharyngeal, the lingual, and finally the phrenic. Points of recommendation are its extreme simplicity, other methods requiring more skill or experience. It should always be used while the body of the child is immersed in a warm bath to prevent chilling.

Schultze's method has some drawbacks, while being very ingenious. It is tiresome, cannot be used on a child with a broken clavicle or extremity, and does not give good results in prematurely born children. The writer cites 4 cases of profound asphyxia in which this method was successful after the more ordinary method, including Schultze's, had all failed. From ten to twenty minutes are sometimes required. At first the tongue gives no resistance, then it resists positively, then follows a mild respiratory movement, and then quiet. The respirations become stronger in a short time and the child begins to cry.

¹ Buffalo Medical Journal, June, 1900.

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